The Natural Remedy Handbook

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Aches & Pains

Pain is a sensation that is transmitted from an area of tissue damage or stress along the sensory nerves to the brain. The brain interprets the information as the sensation of pain.

Substances that decrease pain either interfere with the ability of nerves to conduct messages, or alter the brain's capacity to receive sensations.

Pain may be a symptom of an underlying pathological condition, such as inflammation. It may also be due to other causes, such as bruising, infection, burns, headaches, and sprains and strains. Use caution when treating pain without understanding its cause—this may delay diagnosis of conditions that could continue to worsen without medical attention.

What are the symptoms of pain?

Symptoms of pain include discomfort that is often worsened by movement or pressure and may be associated with irritability, problems sleeping, and fatigue. People with pain may have uncomfortable sensations described as burning, sharp, stabbing, aching, throbbing, tingling, shooting, dull, heavy, and tight.

Lifestyle changes that may be helpful

Body weight may be related to pain tolerance. One study indicated women who are more than 30% above the ideal weight for their age experience pain more quickly and more intensely than do women of ideal weight. No research has investigated the effect of weight loss on pain tolerance.

Exercise increases pain tolerance in some situations, in part because exercise may raise levels of naturally occurring painkillers (endorphins and enkephalins). Many types of chronic pain are helped by exercise, though some types of physical activity may aggravate certain painful conditions. People who want to initiate an exercise program for increasing pain tolerance should first consult a qualified health professional.

Nutritional supplements that may be helpful

Certain amino acids have been found to raise pain thresholds and increase tolerance to pain. One of these, a synthetic amino acid called D-phenylalanine (DPA), decreases pain by blocking the enzymes that break down endorphins and enkephalins, the body's natural pain-killing chemicals. DPA may also produce pain relief by other mechanisms, which are not well understood.

In animal studies, DPA decreased chronic pain within 15 minutes of administration and the effects lasted up to six days. It also decreased responses to acute pain. These findings have been independently verified in at least five other studies. Clinical studies on humans suggest DPA may inhibit some types of chronic pain, but it has little effect on most types of acute pain.

Most human research has tested the pain-relieving effects of 750 to 1,000 mg per day of DPA taken for several weeks of continuous or intermittent use. The results of this research have been mixed, with some trials reporting efficacy, others reporting no difference from placebo, and some reporting equivocal results. It appears that DPA may only work for some people, but a trial period of supplementation seems worthwhile for

many types of chronic pain until more is known. If DPA is not available, a related product, D, L-phenylalanine (DLPA), may be substituted at amounts of 1,500 to 2,000 mg per day.

As early as 1981, preliminary human research showed that DPA made the pain-inhibiting effects of acupuncture stronger. One controlled animal study and two controlled trials in humans showed that DPA taken the day before acupuncture increased the effectiveness of acupuncture in reducing both acute dental and chronic low back pain.

Other amino acids may be beneficial in reducing pain. In the central nervous system, L-tryptophan serves as a precursor to serotonin. Serotonin participates in the regulation of mood and may alter responses to pain. In a preliminary trial, 2,750 mg per day of L-tryptophan decreased pain sensitivity. Another preliminary trial found that L-tryptophan (500 mg every four hours) taken the day before a dental procedure significantly decreased the postoperative pain experienced by patients. In another preliminary trial, 3 grams of L-tryptophan taken daily for four weeks significantly decreased pain in a group of people with chronic jaw pain. No research has been published investigating the pain control potential of 5-hydroxytryptophan (5-HTP), another serotonin precursor that, unlike L-tryptophan, is currently available without a prescription.

Vitamin B12 has exhibited pain-killing properties in animal studies. In humans with vertebral pain syndromes, injections of massive amounts of vitamin B12 (5,000 to 10,000 mcg per day) have reportedly provided pain relief. Further studies are needed to confirm the efficacy of this treatment.

Herbs that may be helpful

Capsaicin is an extract of cayenne pepper that may ease many types of chronic pain when applied regularly to the skin. In animal studies, capsaicin was consistently effective at reducing pain when given by mouth, by injection, or when applied topically. A controlled trial in humans found that application of a solution of capsaicin (0.075%) decreased sensitivity of skin to all noxious stimuli. One review article deemed the research on capsaicin's pain-relieving properties "inconclusive." However, in several uncontrolled and at least five controlled clinical trials, capsaicin has been consistently shown to decrease the pain of many disorders, including trigeminal neuralgia, shingles, diabetic neuropathy, osteoarthritis, and cluster headaches. For treatment of chronic pain, capsaicin ointment or cream (standardized to 0.025 to 0.075% capsaicin) is typically applied to the painful area four times per day. It is common to experience stinging and burning at the site of application, especially for the first week of treatment; avoid getting it in the eyes, mouth, or open sores.

Preliminary reports from Chinese researchers also note that 75 mg per day of THP (an alkaloid from the plant corydalis) was effective in reducing nerve pain in 78% of those tested.

As early as 1763, use of willow bark to decrease pain and inflammation was reported. Its constituents are chemically related to aspirin. These constituents may decrease pain by two methods: by interfering with the process of inflammation, and by interfering with pain-producing nerves in the spinal cord. No human studies have investigated the pain-relieving potential of willow bark, and questions have been raised as to the actual absorption of willow bark's pain-relieving constituents. The potential pain-reducing action of willow is typically slower than that of aspirin.

In animal research, alcohol/water extracts of plants from the genus phyllanthus (25 to 200 mg per 2.2 pounds body weight) have shown a marked ability to decrease pain. This family includes the plants Phyllanthus urinaria, P. caroliniensis, P. amarus, and P. niruri. Like aspirin, phyllanthus extracts appear to reduce pain by decreasing inflammation. Although they are six to seven times more potent than aspirin or acetaminophen in test tube studies, extracts of these plants also demonstrate liver-protective properties, suggesting they may be safer than drugs such as acetaminophen, which has well-documented toxicity to the liver. The usefulness of phyllanthus extracts for treating pain in humans is unknown.

Other herbs that have been historically used to relieve pain (although there are no modern scientific studies yet available) include valerian, passion flower, American skullcap, Piscidia erythrina, and crampbark (Viburnum opulus).

Holistic approaches that may be helpful

Transcutaneous electrical nerve stimulation (TENS) is a form of electrical physical therapy that has been used in the treatment of pain since the early 1970s. Pads are placed on the skin and a mild electrical current is sent through to block pain sensations. Many TENS units are small, portable, and may be hidden under clothing. A review of the first ten years of research on TENS described success rates in treating chronic pain varying from 12.5% to 92% after one year of treatment. Variations in success rates were attributed to differences in the type of pain the TENS was treating. More current research identifies specific conditions that consistently respond well to TENS therapy: rheumatoid arthritis, osteoarthritis, low back pain, phantom limb pain, and post-herpetic nerve pain (shingles). Pain caused by pinched nerves in the spine responds poorly to TENS therapy. While a small number of controlled trials have reported no benefit, most evidence suggests TENS is an effective form of therapy for many types of pain.

Relaxation exercises may decrease the perception of pain. Pain increases as anxiety increases; using methods to decrease anxiety may help reduce pain. In one controlled hospital study, people who were taught mind-body relaxation techniques reported less pain, less difficulty sleeping, and fewer symptoms of depression or anxiety than did people who were not taught the techniques.

Acupuncture has been shown to decrease pain by acting on the enkephalin-based, pain-killing pathways. In 1997, the National Institutes of Health (NIH) stated that acupuncture is useful for muscular, skeletal, and generalized pain, as well as for anaesthesia and post-operative pain. The NIH statement was based on a critical review of over 67 controlled trials of acupuncture for pain control.

Practitioners of manipulation report that it often produces immediate pain relief either in the area manipulated or elsewhere. Controlled trials have found that people given spinal manipulation may experience reduction in pain sensitivity of the skin in related areas, a reduction in joint and muscle tenderness in the area manipulated, and a decrease in elbow tenderness when the neck was manipulated. One study showed no effect of lower spine manipulation on sensitivity to deep pressure over low back muscles and ligaments. Some researchers have speculated that joint manipulation affects pain by enhancing the effects of endorphins. However, only one of three controlled studies has shown an effect of manipulation on endorphin levels.

Hypnosis has been shown to significantly reduce pain associated with office surgical procedures that are performed while the patient is conscious (i.e., without general anaesthesia). People undergoing office surgical procedures received standard care, structured attention or self-hypnotic relaxation in one study. Those using self-hypnosis had no increases in pain during the procedures, compared to those in the other groups. Hypnosis also appeared to stabilize bleeding, decrease the requirement for narcotic pain drugs during the procedure, and shorten procedure time.

Acne Vulgaris

Acne vulgaris, also known as common acne, is an inflammatory condition of the sebaceous glands of the skin. It consists of red, elevated areas on the skin that may develop into pustules and even further into cysts that can cause scarring.

Acne vulgaris occurs mostly on the face, neck, and back of most commonly teenagers and to a lesser extent of young adults. The condition results in part from excessive stimulation of the skin by androgens (male hormones). Bacterial infection of the skin also appears to play a role.

What are the symptoms of acne?

Acne is a skin condition characterized by pimples, which may be closed (sometimes called pustules or “white heads”) or open (blackheads), on the face, neck, chest, back, and shoulders. Most acne is mild, although some people experience inflammation with larger cysts, which may result in scarring.

Dietary changes that may be helpful

Many people assume certain aspects of diet are linked to acne, but there is not much evidence to support this idea. Preliminary research found, for example, that chocolate was not implicated. Similarly, though a diet high in iodine can create an acne-like rash in a few people; this is rarely the cause of acne. In a preliminary study, foods that patients believed triggered their acne failed to cause problems when tested in a clinical setting. Some doctors of natural medicine have observed that food allergy plays a role in some cases of acne, particularly adult acne. However, that observation has not been supported by scientific studies.

Nutritional supplements that may be helpful

In a double-blind trial, topical application of a 4% Niacinamide gel twice daily for two months resulted in significant in improvement in people with acne. However, there is little reason to believe this vitamin would have similar actions if taken orally.

Several double-blind trials indicate that zinc supplements reduce the severity of acne. In one double-blind trial, though not in another, zinc was found to be as effective as oral antibiotic therapy. Doctors sometimes suggest that people with acne take 30 mg of zinc two or three times per day for a few months, then 30 mg per day thereafter. It often takes

12 weeks before any improvement is seen. Long-term zinc supplementation requires 1–2 mg of copper per day to prevent copper deficiency.

Large quantities of vitamin A—such as 300,000 IU per day for females and 400,000–500,000 IU per day for males—have been used successfully to treat severe acne. However, unlike the long-lasting benefits of the synthetic prescription version of vitamin A (isotretinoin as Accutane®), the acne typically returns several months after natural vitamin A is discontinued. In addition, the large amounts of vitamin A needed to control acne can be toxic and should be used only under careful medical supervision.

In a preliminary trial, people with acne were given 2.5 grams of pantothenic acid orally four times per day, for a total of 10 grams per day—a remarkably high amount. A cream containing 20% pantothenic acid was also applied topically four to six times per day. With moderate acne, near-complete relief was seen within two months, while severe conditions took at least six months to respond. Eventually, the intake of pantothenic acid was reduced to 1 to 5 grams per day—still a very high amount.

A preliminary report suggested that vitamin B6 at 50 mg per day may alleviate premenstrual flare-ups of acne experienced by some women. While no controlled research has evaluated this possibility, an older controlled trial of resistant adolescent acne found that 50–250 mg per day decreased skin oiliness and improved acne in 75% of the participants. However, another preliminary report suggested that vitamin B6 supplements might exacerbate acne vulgaris.

Herbs that may be helpful

A clinical trial compared the topical use of 5% tea tree oil to 5% benzyl peroxide for common acne. Although the tea tree oil was slower and less potent in its action, it had far fewer side effects and was thus considered more effective overall.

One controlled trial found that guggul (Commiphora mukul) compared favourably to tetracycline in the treatment of cystic acne. The amount of guggul extract taken in the trial was 500 mg twice per day.

Historically, tonic herbs, such as burdock, have been used in the treatment of skin conditions. These herbs are believed to have a cleansing action when taken internally. Burdock root tincture may be taken in the amount of 2 to 4 ml per day. Dried root preparations in a capsule or tablet can be used at 1 to 2 grams three times per day. Many herbal preparations combine burdock root with other alterative herbs, such as yellow dock, red clover, or cleavers. In the treatment of acne, none of these herbs has been studied in scientific research.

Some older, preliminary German research suggests that vitex might contribute to clearing of premenstrual acne, possibly by regulating hormonal influences on acne.[1]Women in these studies used 40 drops of a concentrated liquid product once daily.

AIDS

Acquired immunodeficiency syndrome (AIDS) is a condition in which the immune system becomes severely weakened and loses its ability to fight infections.

Although some scientists have questioned whether or not the human immunodeficiency virus (HIV) has actually been proven to cause AIDS, most researchers do believe that HIV causes AIDS.
AIDS is an extremely complex disorder, and no cure is currently available. Certain drugs appear to be capable of slowing the progression of the disease. In addition, various nutritional factors may be helpful. However, because of the complicated nature of this disorder, medical supervision is strongly recommended with regard to dietary changes and nutritional supplements. People who have been infected with HIV are hereafter referred to as "HIV-positive."

What are the symptoms of HIV and AIDS?

HIV causes a broad spectrum of clinical problems, which often mimic other diseases. Within a few weeks of infection, some people may experience flu-like signs and symptoms, including fever, malaise, rash, joint pain, and generalized swelling of the lymph nodes. These acute manifestations usually disappear, and many people remain asymptomatic for long periods. AIDS, the clinical syndrome associated with HIV infection, produces symptoms throughout the body related to opportunistic infections, tumours, and other immune-deficiency complications.

Dietary changes that may be helpful

People with AIDS often lose significant amounts of weight or suffer from recurrent diarrhoea. A diet high in protein and total calories may help a person maintain his or her body weight. In addition, whole foods are preferable to refined and processed foods. Whole foods contain larger amounts of many vitamins and minerals, and people with HIV infection tend to suffer from multiple nutritional deficiencies.

Nonetheless, no evidence currently suggests that dietary changes are curative for people with AIDS, or even that they significantly influence the course of the disease. In fact, a controlled trial comparing the efficacy of three nutritional regimens in the prevention of weight loss in HIV-positive people found no benefit from increasing caloric intake. A 500-calorie per day caloric supplement with fatty acids plus a multivitamin and minerals did not promote increases in body weight beyond that offered by a multivitamin-mineral supplement alone.

AIDS-related weight loss and chronic diarrhoea are sometimes the result of abnormal intestinal function in the absence of an infectious organism. This condition, called "HIV enteropathy" (pronounced "en-ter-OP-a-thee"), may respond to a gluten-free diet. In a preliminary trial, men with HIV enteropathy were given a gluten-free diet for one week. During that week, the number of episodes of diarrhoea decreased by nearly 40%. When gluten-containing foods were re-introduced for a week, the diarrhoea returned. When they were eliminated a second time, again for one week, the episodes of diarrhoea were again reduced. Participants in the study also experienced significant weight gain during the gluten-free periods.

Lifestyle changes that may be helpful

Loss of strength and lean body mass are frequent complications in people with AIDS. Drug therapy with anabolic steroids is sometimes used to counteract these losses. Preliminary trials suggest that progressive resistance training (i.e., weight training) may be used as an alternative or adjunct to steroids in this disease. In a preliminary trial, people with HIV who did progressive resistance training three times per week for eight weeks had significant increases in their lean body mass. Exercise of any type three to

four times per week or more has been associated with slower progression to AIDS at one year and with a slower progression to death from AIDS at one year in men.

Nutritional supplements that may be helpful

Because people with HIV infection or AIDS often have multiple nutritional deficiencies, a broad-spectrum nutritional supplement may be beneficial. In one trial, HIV-positive men who took a multivitamin-mineral supplement had slower onset of AIDS, compared with men who did not take a supplement. Use of a multivitamin by pregnant and breast-feeding Tanzanian women with HIV did not affect the risk of transmission of HIV from mother to child, either in utero, during birth, or from breast-feeding.

Selenium deficiency is an independent factor associated with high mortality among HIV-positive people. HIV-positive people who took selenium supplements experienced fewer infections, better intestinal function, improved appetite, and improved heart function (which had been impaired by the disease) than those who did not take the supplements. The usual amount of selenium taken was 400 mcg per day.

Selenium deficiency has been found more often in people with HIV-related cardiomyopathy (heart abnormalities) than in those with HIV and normal heart function. People with HIV-related cardiomyopathy may benefit from selenium supplementation. In a small preliminary trial, people with AIDS and cardiomyopathy, 80% of who were found to be deficient in selenium, were given 800 mcg of selenium per day for 15 days, followed by 400 mcg per day for eight days. Improvements in heart function were noted after selenium supplementation. People wishing to supplement with more than 200 mcg of selenium per day should be monitored by a doctor.

The amino acid, N-acetyl cysteine (NAC), has been shown to inhibit the replication of HIV in test tube studies. In a double-blind trial, supplementing with 800 mg per day of NAC slowed the rate of decline in immune function in people with HIV infection. NAC also promotes the synthesis of glutathione, a naturally-occurring antioxidant that is believed to be protective in people with HIV infection and AIDS.

The combination of glutamine, Arginine, and the amino acid derivative, hydroxymethylbutyrate (HMB), may prevent loss of lean body mass in people with AIDS-associated wasting. In a double-blind trial, AIDS patients who had lost 5% of their body weight in the previous three months received either placebo or a nutrient mixture containing 1.5 grams of HMB, 7 grams of L-glutamine, and 7 grams of L-Arginine twice daily for eight weeks. Those supplemented with placebo gained an average of 0.37 pounds; mostly fat, but lost lean body mass. Those taking the nutrient mixture gained an average of 3 pounds, 85% of which was lean body weight.

In a double-blind trial, the non-disease-causing yeast Saccharomyces boulardii (1 gram three times per day) helped stop diarrhoea in HIV-positive people.[17] However, people with severely compromised immune function have been reported to develop yeast infections in the bloodstream after consuming some yeast organisms that are benign for healthy people. For that reason, people with HIV infection who wish to take Saccharomyces boulardii, brewer's yeast (Saccharomyces cerevisiae), or other live organisms should first consult a doctor.

A deficient level of dehydroepiandrosterone sulphate (DHEAS) in the blood is associated with poor outcomes in people with HIV. Large amounts of supplemental

dehydroepiandrosterone (DHEA) may alleviate fatigue and depression in HIV-positive men and women. In a preliminary trial, men and women with HIV infection took 200–500 mg of DHEA per day for eight weeks.[21] All participants initially had both low mood and low energy. After eight weeks of DHEA supplementation, 72% of the participants reported their mood to be "much improved" or "very much improved," and 81% reported having significant improvements in energy level. DHEA supplementation had no effect on CD4 cell (helper T-cell) counts or testosterone levels.

Vitamin A deficiency appears to be very common in people with HIV infection. Low blood levels of vitamin A are associated with greater disease severity and increased transmission of the virus from a pregnant mother to her infant. However, in preliminary and double-blind trials, supplementation with vitamin A failed to reduce the overall mother-to-child transmission of HIV. HIV-positive women who took 5,000 IU per day of vitamin A (as retinyl palmitate) and 50,000 IU per day of beta-carotene during the third trimester (13 weeks) of pregnancy, plus an additional single amount of 200,000 IU of vitamin A at delivery, had the same rate of transmission of HIV to their infants as those who did not take the supplement. However, lower rates of illness have been observed in the children of HIV-positive mothers when the children were supplemented with 50,000–200,000 IU of vitamin A every two to three months.

Little research has explored whether vitamin A supplements are helpful at halting disease progression. HIV-positive children given two consecutive oral supplements of vitamin A (200,000 IU in a gelcap) in the two days following influenza vaccinations had a modest but significant decrease in viral load. In one trial, giving people an extremely high (300,000 IU) amount of vitamin A one time only did not improve short-term measures of immunity in women with HIV.

Beta-carotene levels have been found to be low in HIV-positive people, even in those without symptoms. However, trials on the effect of beta-carotene supplements have produced conflicting results. In one double-blind trial, supplementing with 300,000 IU per day of beta-carotene significantly increased the number of CD4+ cells in people with HIV infection. In another trial, the same amount of beta-carotene had no effect on CD4+ cell counts or various other measures of immune function in HIV-infected people.

In HIV-positive people with B-vitamin deficiency, the use of B-complex vitamin supplements appears to delay progression to and death from AIDS. Thiamine (vitamin B1) deficiency has been identified in nearly one-quarter of people with AIDS. It has been suggested that a thiamine deficiency may contribute to some of the neurological abnormalities that are associated with AIDS. Vitamin B6 deficiency was found in more than one-third of HIV-positive men; vitamin B6 deficiency was associated with decreased immune function in this group. In a population study of HIV-positive people, intake of vitamin B6 at more than twice the recommended dietary allowance (RDA is 2 mg per day for men and 1.6 mg per day for women) was associated with improved survival. Low blood levels of folic acid and vitamin B12 are also common in HIV-positive people.

Preliminary observations suggest a possible role for vitamin B3 in HIV prevention and treatment. A form of vitamin B3 (Niacinamide) has been shown to inhibit HIV in test tube studies. However, no published data have shown vitamin B3 to inhibit HIV in animals or in people. One study did show that HIV-positive people who consume more than 64 mg of vitamin B3 per day have a decreased risk of progression to AIDS or AIDS-related death. Clinical trials in humans are required to validate these preliminary observations.

Vitamin C has been shown to inhibit HIV replication in test tubes. Intake of vitamin C by HIV-positive persons may be associated with a reduced risk of progression to AIDS. Some doctors recommend large amounts of vitamin C for people with AIDS. Reported benefits in preliminary research include greater resistance against infection and an improvement in overall well-being. The amount of vitamin C used in that study ranged from 40 to 185 grams per day. Supplementation with such large amounts of vitamin C must be monitored by a doctor. This same researcher also reports some success in using a topical vitamin C paste to treat herpes simplex outbreaks and Kaposi's sarcoma in people with AIDS.

In test-tube studies, vitamin E improved the effectiveness of the anti-HIV drug zidovudine (AZT) while reducing its toxicity. Similarly, animal research suggests that zinc and NAC supplementation may protect against AZT toxicity. It is not known whether oral supplementation with these nutrients would have similar effects in people taking AZT.

Blood levels of coenzyme Q10 (CoQ10) were also found to be low in people with HIV infection or AIDS. In a small preliminary trial, people with HIV infection took 200 mg per day of CoQ10. Eighty-three percent of these people experienced no further infections for up to seven months, and the counts of infection-fighting white blood cells improved in three cases.

Blood levels of both zinc and selenium are frequently low in people with HIV infection. Zinc supplements (45 mg per day) have been shown to reduce the number of infections in people with AIDS.

Iron deficiency is often present in HIV-positive children. While iron is necessary for normal immune function, iron deficiency also appears to protect against certain bacterial infections. Iron supplementation could therefore increase the severity of bacterial infections in people with AIDS. For that reason, people with HIV infection or AIDS should consult a doctor before supplementing with iron.

The amino acid, glutamine, is needed for the synthesis of glutathione, an important antioxidant within cells that is frequently depleted in people with HIV and AIDS. In well-nourished people, the body usually manufactures enough glutamine to prevent a deficiency. However, people with HIV or AIDS are often malnourished and may be deficient in glutamine. In such people, glutamine supplementation may be needed, along with NAC, to maintain adequate levels of glutathione. It is not known how much glutamine is needed for that purpose; however, in other trials, 4–8 grams of glutamine per day was used. In a double-blind trial, massive amounts of glutamine (40 grams per day) in combination with several antioxidants (27,000 IU per day of beta-carotene; 800 mg per day of vitamin C; 280 mcg per day of selenium; 500 IU per day of vitamin E) were given for 12 weeks to AIDS patients experiencing problems maintaining normal weight. Those who took the glutamine-antioxidant combination experienced significant gains in body weight compared with those taking placebo. Larger trials are needed to determine the possible benefits of this nutrient combination on reducing opportunistic infections and long-term mortality.

People with AIDS have low levels of methionine. Some researchers suggest that these low methionine levels may explain some aspects of the disease process, especially the deterioration that occurs in the nervous system and is responsible for symptoms such as

dementia. A preliminary trial found that methionine (6 grams per day) may improve memory recall in people with AIDS-related nervous system degeneration.

In a preliminary trial, a thymus extract known as Thymomodulin® improved several immune parameters among people with early HIV infection, including an increase in the number of T-helper cells.

Whey protein is rich in the amino acid cysteine, which the body uses to make glutathione, an important antioxidant. A double-blind trial showed that 45 grams per day of whey protein increased blood glutathione levels in a group of HIV-infected people. Test tube and animal studies suggest that whey protein may improve some aspects of immune function.

Herbs that may be helpful

Many different herbs have been shown in test tube studies to inhibit the function or replication of HIV. Few of these studies have been followed up with any kind of investigation in HIV-positive humans. Some notable exceptions to this rule are discussed below.

There are three categories of herbs used in people with HIV infection. The first are herbs that are believed to directly kill HIV (antiretroviral herbs). The second are herbs that strengthen the immune system to better withstand HIV's onslaught (immuno-modulating herbs). The third are herbs that combat opportunistic infections (antimicrobial herbs). The following table summarizes each category and herbs that belong in each. Note that some herbs fall into more than one category.

One double-blind trial has found that 990 mg per day of an extract of the leaves and stems of boxwood (Buxus sempervirens) could delay the progression of HIV infection (as measured by a decline in CD4 cell counts). No adverse effects directly attributable to the extract were reported. Taking twice the amount of boxwood extract did not lead to further benefits and may have actually decreased its usefulness.

Liquorice has shown the ability to inhibit reproduction of HIV in test tubes. Clinical trials have shown that injections of glycyrrhizin (isolated from liquorice) may have a beneficial effect on AIDS. There is preliminary evidence that orally administered liquorice also may be safe and effective for long-term treatment of HIV infection. Amounts of liquorice or glycyrrhizin used for treating HIV-positive people warrant monitoring by a physician, because long-term use of these substances can cause high blood pressure, potassium depletion, or other problems. Approximately 2 grams of liquorice root should be taken per day in capsules or as tea. Deglycyrrhizinated liquorice (DGL) will not inhibit HIV.

An extract from stem bark latex of Sangre de Drago (Croton lechleri), an herb from the Amazon basin of Peru, has demonstrated significant anti-diarrhoeal activity in preliminary and double-blind trials. Additional double-blind research has demonstrated the extract's effectiveness for diarrhoea associated with HIV infection and AIDS. Very high amounts of this extract (350–700 mg four times daily for seven or more days) were used in the studies. Such levels of supplementation should always be supervised by a doctor. Most of this research on Sangre de Drago is unpublished, and much of it is derived from manufacturers of the formula. Further double-blind trials, published in peer-reviewed medical journals, and are needed to confirm the efficacy reported in these studies.

A constituent from St. John's Wort known as hypericin has been extensively studied as a potential way to kill HIV. A preliminary trial found that people infected with HIV who took 1 mg of hypericin per day by mouth had some improvements in CD4+ cell counts, particularly if they had not previously used AZT. A small number of people developed signs of mild liver damage in this study. Another much longer preliminary trial used injectable extracts of St. John's Wort twice a week combined with three tablets of a standardized extract of St. John's Wort taken three times per day by mouth. This study found not only improvements in CD4+ counts but only 2 of 16 participants developed opportunistic infections. No liver damage or any other side effects were noted in this trial. In a later study, much higher amounts of injectable or oral hypericin (0.25 mg/kg body weight or higher) led to serious side effects, primarily extreme sensitivity to sunlight. At this point, it is unlikely that isolated hypericin or supplements of St. John's Wort extract supplying very high levels of hypericin can safely be used by people with HIV infection, particularly given St. John's Wort's many drug interactions.

Garlic may assist in combating opportunistic infections. In one trial, administration of an aged garlic extract reduced the number of infections and relieved diarrhoea in a group of patients with AIDS. Garlic's active constituents have also been shown to kill HIV in the test tube, though these results have not been confirmed in human trials.

A preliminary trial of isolated andrographolides, found in andrographis, determined that while they decreased viral load and increased CD4 lymphocyte levels in people with HIV infection, they also caused potentially serious liver problems and changes in taste in many of the participants. It is unknown whether andrographis directly killed HIV or was having an immune-strengthening effect in this trial.

Other immune-modulating plants that could theoretically be beneficial for people with HIV infection include Asian ginseng, eleuthero, and the medicinal mushrooms shiitake and reishi. One preliminary study found that steamed then dried Asian ginseng (also known as red ginseng) had beneficial effects in people infected with HIV, and increased the effectiveness of the anti-HIV drug, AZT. This supports the idea that immuno-modulating herbs could benefit people with HIV infection, though more research is needed.

The Chinese herb bupleurum, as part of the herbal formula sho-saiko-to, has been shown to have beneficial immune effects on white blood cells taken from people infected with HIV. Sho-saiko-to has also been shown to improve the efficacy of the anti-HIV drug lamivudine in the test tube. One preliminary study found that 7 of 13 people with HIV given sho-saiko-to had improvements in immune function. Double-blind trials are needed to determine whether bupleurum or sho-saiko-to might benefit people with HIV infection or AIDS. Other herbs in sho-saiko-to have also been shown to have anti-HIV activity in the test tube, most notably Asian skullcap. Therefore studies on sho-saiko-to cannot be taken to mean that bupleurum is the only active herb involved. The other ingredients are peony root, pinellia root, cassia bark, ginger root, jujube fruit, Asian ginseng root, Asian skullcap root, and liquorice root.

Maitake mushrooms, which are currently being studied, contain immuno-modulating polysaccharides (including beta-D-glucan) that may be supportive for HIV infection.

A controversy has surrounded the use of Echinacea in people infected with HIV. Test tube studies initially showed that Echinacea's polysaccharides could increase levels of a substance that might stimulate HIV to spread. However, these results have not been shown to occur when Echinacea is taken orally by humans. In fact, one double-blind trial found that Echinacea angustifolia root (1 gram three times per day by mouth) greatly increased immune activity against HIV, while placebo had no effect. Further studies are needed to determine the safety of using Echinacea in HIV-positive people.

The story of European mistletoe is similar to that of Echinacea. Though originally believed to be a problem based on test tube studies, preliminary human clinical trials of mistletoe injections into the skin have shown only beneficial effects. Oral mistletoe is very unlikely to have the same effects as injected mistletoe. Injectable mistletoe should only be used under the supervision of a qualified healthcare professional.

Turmeric may be another useful herb with immune effects in people infected with HIV. One preliminary trial found that curcumin, the main active compound in turmeric, helped improve CD4+ cell counts. The amount used in this study was 1 gram three times per day by mouth. These results differed from those found in a second preliminary trial using 4.8 or 2.7 grams of curcumin daily. In that study, there was no apparent effect of curcumin on HIV replication rates.

Cat's claw is another immuno-modulating herb. Standardized extracts of cat's claw have been tested in small, preliminary trials in people infected with HIV, showing some benefits in preventing CD4 cell counts from dropping and in preventing opportunistic infections. Further study is needed to determine whether cat's claw is truly beneficial for people with HIV infection or AIDS.

A 5% solution of tea tree oil has been shown to eliminate oral thrush in people with AIDS, according to one preliminary trial. The volunteers in the study swished 15 ml of the solution in their mouths four times per day and then spit it out. This may cause mild burning for a short period of time after use.

A trial of a combination naturopathic protocol (consisting of multiple nutrients, liquorice, lomatium, a combination Chinese herbal product, lecithin, calf thymus extract, lauric acid monoglycerol ester, and St. John's Wort) showed a possible slowing of the progression of mild HIV infection and a reduction of some symptoms.[97] Because there was no placebo group in this trial, the findings must be considered preliminary; controlled trials are needed to determine whether this protocol is effective.

Age-Related Cognitive Decline

A decline in memory and cognitive (thinking) function is considered by many authorities to be a normal consequence of aging. While age-related cognitive decline (ARCD) is therefore not considered a disease, authorities differ on whether ARCD is in part related to Alzheimer's disease and other forms of dementia[3] or whether it is a distinct entity. People with ARCD experience deterioration in memory and learning, attention and concentration, thinking, use of language, and other mental functions.

ARCD usually occurs gradually. Sudden cognitive decline is not a part of normal aging. When people develop an illness such as Alzheimer's disease, mental deterioration usually happens quickly. In contrast, cognitive performance in elderly adults normally

remains stable over many years, with only slight declines in short-term memory and reaction times.

People sometimes believe they are having memory problems when there are no actual decreases in memory performance. Therefore, assessment of cognitive function requires specialized professional evaluation. Psychologists and psychiatrists employ sophisticated cognitive testing methods to detect and accurately measure the severity of cognitive decline. A qualified health professional should be consulted if memory impairment is suspected.

Some older people have greater memory and cognitive difficulties than do those undergoing normal aging, but their symptoms are not so severe as to justify a diagnosis of Alzheimer's disease. Some of these people go on to develop Alzheimer's disease; others do not. Authorities have suggested several terms for this middle category, including "mild cognitive impairment"[14] and "mild neurocognitive disorder." Risk factors for ARCD include advancing age, female gender, prior heart attack, and heart failure.

What are the symptoms of age-related cognitive decline?

People with ARCD experience deterioration in memory and learning, attention and concentration, thinking, use of language, and other mental functions.

Dietary changes that may be helpful

In the elderly population of southern Italy, which eats a typical Mediterranean diet, high intake of monounsaturated fatty acids (e.g., olive oil) has been associated with protection against ARCD in preliminary research. However, the monounsaturated fatty acid content of this diet might only be a marker for some other dietary or lifestyle component responsible for a low risk of ARCD.

Caffeine may improve cognitive performance. Higher levels of coffee consumption were associated with improved cognitive performance in elderly British people in a preliminary study. Older people appeared to be more susceptible to the performance-improving effects of caffeine than were younger people. Similar but weaker associations were found for tea consumption. These associations have not yet been studied in clinical trials.

Animal studies suggest that diets high in antioxidant-rich foods, such as spinach and strawberries, may be beneficial in slowing ARCD. Among people aged 65 and older, higher vitamin C and beta-carotene levels in the blood have been associated with better memory performance, though these nutrients may only be markers for other dietary factors responsible for protection against cognitive disorders.

One preliminary study found that, among middle-aged men, those who ate more tofu had a higher rate of cognitive decline compared with men who ate less tofu. Since tofu and other soy products have consistently demonstrated important health benefits in this age group (e.g., as cholesterol-lowering foods), middle-aged men should not limit their consumption of these foods until the results of this isolated study are independently confirmed.

Lifestyle changes that may be helpful

Cigarette smokers and people with high levels of education appear to have some protection against ARCD. The reason for each of these associations remains unknown.

However, as cigarette smoking generally is not associated with other health benefits and results in serious health risks, doctors recommend abstinence from smoking, even by people at risk of ARCD.

A large, preliminary study in 1998 found associations between hypertension and deterioration in mental function. Research is needed to determine if lowering blood pressure is effective for preventing ARCD.

A randomized, controlled trial determined that group exercise has beneficial effects on physiological and cognitive functioning, and well-being in older people. At the end of the trial, the exercisers showed significant improvements in reaction time, memory span, and measures of well-being when compared with controls. Going for walks may be enough to modify the usual age-related decline in reaction time. Faster reaction times were associated with walking exercise in a British study. The results of these two studies suggest a possible role for exercise in preventing ARCD. However, controlled trials in people with ARCD are needed to confirm these observations.
Psychological counselling and training to improve memory have produced improvements in cognitive function in persons with ARCD.

Nutritional supplements that may be helpful

Several clinical trials suggest that acetyl-L-Carnitine delays onset of ARCD and improves overall cognitive function in the elderly. In a controlled clinical trial, acetyl-L-Carnitine was given to elderly people with mild cognitive impairment. After 45 days of acetyl-L-Carnitine supplementation at 1,500 mg per day, significant improvements in cognitive function (especially memory) were observed. Another large trial of acetyl-L-Carnitine for mild cognitive impairment in the elderly found that 1,500 mg per day for 90 days significantly improved memory, mood, and responses to stress. The favourable effects persisted at least 30 days after treatment was discontinued. Controlled and uncontrolled clinical trials on acetyl-L-Carnitine corroborate these findings.

Phosphatidylserine derived from bovine brain phospholipids has been shown to improve memory, cognition, and mood in the elderly in at least two placebo-controlled trials. In both trials, geriatric patients received 300 mg per day of phosphatidylserine or placebo. In an unblinded trial of ten elderly women with depressive disorders, supplementation with phosphatidylserine produced consistent improvement in depressive symptoms, memory, and behaviour after 30 days of treatment. A double-blind trial of 494 geriatric patients with cognitive impairment found that 300 mg per day of phosphatidylserine produced significant improvements in behavioural and cognitive parameters after three months and again after six months.

A double-blind trial found both 30 mg and 60 mg per day of vinpocetine improved symptoms of dementia in patients with various brain diseases. Another double-blind trial gave 30 mg per day of vinpocetine for one month, followed by 15 mg per day for an additional two months, to people with dementia associated with hardening of the arteries of the brain, and significant improvement in several measures of memory and other cognitive functions was reported. Other double-blind trials have reported similar effects of vinpocetine in people with some types of dementia or age-related cognitive decline. However, a study of Alzheimer patients in the United States found vinpocetine given in increasing amounts from 30 mg to 60 mg per day over the course of a year neither reversed nor slowed the decline in brain function measured by a number of different tests.

Vincamine, the unmodified compound found naturally in Vinca minor, has also been tested in people with dementia. A large double-blind trial found 60 mg per day of vincamine was more effective than placebo for improving several measures of cognitive function in patients with either Alzheimer's disease or dementia associated with vascular brain disease. A small double-blind study of vascular dementia also reported benefits using 80 mg per day of vincamine.

Vitamin B6 (pyridoxine) deficiency is common among people over age 65. A Finnish study demonstrated that approximately 25% of Finnish and Dutch elderly people are deficient in vitamin B6 as compared to younger adults. In a double-blind trial, correcting this deficiency with 2 mg of pyridoxine per day resulted in small psychological improvements in the elderly group. However, the study found no direct correlation between amounts of vitamin B6 in the cells or blood and psychological parameters. A more recent double-blind trial of 38 healthy men, aged 70 to 79 years, showed that 20 mg pyridoxine per day improved memory performance, especially long-term memory.

Supplementation with vitamin B12 may improve cognitive function in elderly people who have been diagnosed with a B12 deficiency. Such a deficiency in older people is not uncommon. In a preliminary trial, intramuscular injections of 1,000 mcg of vitamin B12 were given once per day for a week, then weekly for a month, then monthly thereafter for 6 to 12 months. Researchers noted "striking" improvements in cognitive function among 22 elderly people with vitamin B12 deficiency and cognitive decline. Cognitive disorders due to vitamin B12 deficiency may also occur in people who do not exhibit the anaemia that often accompanies vitamin B12 deficiency. For example, in a study of 141 elderly people with cognitive abnormalities due to B12 deficiency, 28% had no anaemia. All participants were given intramuscular injections of vitamin B12, and all showed subsequent improvement in cognitive function.

Vitamin B12 injections put more B12 into the body than is achievable with absorption from oral supplementation. Therefore, it is unclear whether the improvements in cognitive function described above were due simply to correcting the B12 deficiency or to a therapeutic effect of the higher levels of vitamin B12 obtained through injection. Elderly people with ARCD should be evaluated by a healthcare professional to see if they have a B12 deficiency. If a deficiency is present, the best way to proceed would be initially to receive vitamin B12 injections. If the injections result in cognitive improvement, some doctors would then recommend an experimental trial with high amounts of oral B12, despite a current lack of scientific evidence. If oral vitamin B12 is found to be less effective than B12 shots, the appropriate treatment would be to revert to injectable B12. At present, no research trials support the use of any vitamin B12 supplementation in people who suffer from ARCD but are not specifically deficient in vitamin B12.

Melatonin is a hormone secreted by the pineal gland in the brain. It is partially responsible for regulating sleep-wake cycles. Cognitive function is linked to adequate sleep and normal sleep-wake cycles. Cognitive benefits from melatonin supplementation have been suggested by preliminary research in a variety of situations and may derive from the ability of melatonin to prevent sleep disruptions. A double-blind trial of ten elderly patients with mild cognitive impairment showed that 6 mg of melatonin taken two hours before bedtime significantly improved sleep, mood, and memory, including the ability to remember previously learned items. However, in a double-blind case study of

one healthy person, 1.6 mg of melatonin had no immediate effect on cognitive performance.

The long-term effects of regularly taking melatonin supplements remain unknown, and many healthcare practitioners recommend that people take no more than 3 mg per evening. A doctor familiar with the use of melatonin should supervise people who wish to take it regularly.

Use of vitamin C or vitamin E supplements, or both, has been associated with better cognitive function and a reduced risk of certain forms of dementia (not including Alzheimer's disease). Clinical trials of these antioxidants are needed to confirm the possible benefits suggested by this study.

Herbs that may be helpful

Most but not all clinical trials, many of them double-blind; have found ginkgo supplementation to be a safe and effective treatment for ARCD.

Huperzine A, an isolated alkaloid from the Chinese medicinal herb huperzia (Huperzia serrata), has been found to improve cognitive function in elderly people with memory disorders. One double-blind trial found that huperzine. A (100 to 150 mcg two to three times per day for four to six weeks) was more effective for improving minor memory loss associated with ARCD than the drug piracetam. More research is needed before the usefulness of huperzine A is confirmed for mild memory loss associated with ARCD.

Allergies and Sensitivities

Allergies are responses mounted by the immune system to a particular food, inhalant (airborne substance), or chemical. In popular terminology, the terms "allergies" and "sensitivities" are often used to mean the same thing, although many sensitivities are not true allergies. The term "sensitivity" is general and may include true allergies, reactions that do not affect the immune system (and therefore are not technically allergies), and reactions for which the cause has yet to be determined.

Some non-allergic types of sensitivity are called intolerances and may be caused by toxins, enzyme inadequacies, drug-like chemical reactions, psychological associations, and other mechanisms. Examples of well-understood intolerances are lactose intolerance and phenylketonuria. Environmental sensitivity or intolerance are terms sometimes used for reactions to chemicals found either indoors or outdoors in food, water, medications, cosmetics, perfumes, textiles, building materials, and plastics. Detecting allergies and other sensitivities and then eliminating or reducing exposure to the sources is often a time-consuming and challenging task that is difficult to undertake without the assistance of an expert.

What are the symptoms of allergies?

Common symptoms may include itchy, watery eyes; sneezing; headache; fatigue; postnasal drip; runny, stuffy, or itchy nose; sore throat; dark circles under the eyes; an itchy feeling in the mouth or throat; abdominal pain; diarrhoea; and the appearance of an itchy, red skin rash. Life-threatening allergic reactions—most commonly to peanuts, nuts,

shellfish, and some drugs—are uncommon. When they do occur, initial symptoms may include trouble breathing and difficulty swallowing.

Dietary changes that may be helpful

A low-allergen diet, also known as an elimination diet or a hypoallergenic diet is often recommended to people with suspected food allergies to find out if avoiding foods that commonly trigger allergies will provide relief from symptoms. This diet eliminates foods and food additives considered to be common allergens, such as wheat, dairy, eggs, corn, soy, citrus fruits, nuts, peanuts, tomatoes, food colouring and preservatives, coffee, and chocolate. Some popular books offer guidance to people who want to attempt this type of diet. The low-allergen diet is not a treatment for people with food allergies, however. Rather, it is a diagnostic tool used to help discover which foods a person is sensitive to. It is maintained only until a reaction to a food or foods has been diagnosed or ruled out. Once food reactions have been identified, only those foods that are causing a reaction are subsequently avoided; all other foods that had previously been eaten are once again added to the diet. While individual recommendations regarding how long a low-allergen diet should be adhered to vary from five days to three weeks, many nutritionally oriented doctors believe that a two-week trial is generally sufficient for the purpose of diagnosing food reactions.

Strict avoidance of allergenic foods for a period of time (usually months or years) sometimes results in the foods no longer causing allergic reactions.[121] Restrictive elimination diets and food reintroduction should be supervised by a qualified healthcare professional.

Lifestyle changes that may be helpful

People with inhalant allergies are often advised to reduce exposure to common household allergens like dust, mould, and animal dander, in the hope that this will reduce symptoms even if other, non-household allergens cannot be avoided Strategies include removing carpets, frequent cleaning and vacuuming, using special air filters in the home heating system, choosing allergen-reducing bed and pillow coverings, and limiting household pets' access to sleeping areas.

Nutritional supplements that may be helpful

Pro-biotics may be important in the control of food allergies because of their ability to improve digestion, by helping the intestinal tract control the absorption of food allergens and/or by changing immune system responses to foods. One group of researchers has reported using pro-biotics to successfully treat infants with food allergies in two trials: a double-blind trial using Lactobacillus GG bacteria in infant formula, and a preliminary trial giving the same bacteria to nursing mothers. Pro-biotics may also be important in non-allergy types of food intolerance caused by imbalances in the normal intestinal flora.

Thymomodulin® is a special preparation of the thymus gland of calves. In a double-blind study of allergic children who had successfully completed an elimination diet, 120 mg per day of thymomodulin prevented allergic skin reactions to food and lowered blood levels of antibodies associated with those foods. These results confirmed similar findings in an earlier, controlled trial.

According to one theory, allergies are triggered by partially undigested protein. Proteolytic enzymes may reduce allergy symptoms by further breaking down undigested protein to sizes that are too small to cause allergic reactions. Preliminary human evidence supports this theory. Hydrochloric acid secreted by the stomach also helps the digestion of protein, and preliminary research suggests that some people with allergies may not produce adequate amounts of stomach acid. However, no controlled trials have investigated the use of enzyme supplements to improve digestion as a treatment for food allergies.

Many of the effects of allergic reactions are caused by the release of histamine, which is the reason antihistamine medication is often used by allergy sufferers. Some natural substances, such as vitamin C and flavonoids, including quercetin, have demonstrated antihistamine effects in test tube, animal, and other preliminary studies. However, no research has investigated whether these substances can specifically reduce allergic reactions in humans.

Alzheimer's Disease

Alzheimer's disease is a brain disorder that occurs in the later years of life. People with Alzheimer's develop progressive loss of memory and gradually lose the ability to function and to take care of themselves.

The cause of this disorder is not known, although the problem appears to involve abnormal breakdown of acetylcholine (an important neurotransmitter in the brain). Some studies suggest it may be related to an accumulation of aluminium in the brain. Despite this suggestion, aluminium toxicity has been studied in humans, and it is quite distinct from Alzheimer's disease. Therefore, the importance of aluminium in causing Alzheimer's disease remains an unresolved issue.

What are the symptoms of Alzheimer's disease?

Symptoms of Alzheimer's include a pattern of forgetfulness, short attention span, difficulty in performing routine tasks, language problems, disorientation, poor judgment, problems with thinking, misplacing things, depression, irritability, paranoia, hostility, and lack of initiative.

Dietary changes that may be helpful

Whether aluminium in the diet can cause Alzheimer's disease remains controversial. A preliminary study found Alzheimer's disease patients are more likely to have consumed foods high in aluminium additives (e.g., some grain product desserts, American cheese, chocolate pudding, chocolate beverages, salt, and some chewing gum), compared to people without the disease. Until this issue is resolved, it seems prudent for healthy people to take steps to minimize exposure to this unnecessary and potentially toxic metal by reducing intake of foods cooked in aluminium pots, foods that come into direct contact with aluminium foil, beverages stored in aluminium cans, and foods containing aluminium additives. Aluminium is added to some municipal water supplies to prevent the accumulation of particulates. In such areas, bottled water may be preferable. It appears unlikely; however, that avoidance of aluminium exposure after the diagnosis of Alzheimer's disease could significantly affect the course of the disease.

In population studies, high dietary intake of fat and calories was associated with an increased risk for Alzheimer's disease, whereas high intake of fish was associated with a decreased risk. Whether these associations represent cause and effect is unknown.

Lifestyle changes that may be helpful

Keeping active outside of one's work, either physically or mentally, during midlife may help prevent Alzheimer's disease. People with higher levels of non-occupational activities, such as playing a musical instrument, gardening, physical exercise, or even playing board games, were less likely to develop Alzheimer's later in life, according to one study.

Nutritional supplements that may be helpful

Several clinical trials have found that acetyl-L-Carnitine supplementation delays the progression of Alzheimer's disease, improves memory, and enhances overall performance in some people with Alzheimer's disease. However, in one double-blind trial, people who received acetyl-L-Carnitine (1 gram three times per day) deteriorated at the same rate as those given a placebo. Overall, however, most short-term studies have shown clinical benefits, and most long-term studies (one year) have shown a reduction in the rate of deterioration. A typical supplemental amount is 1 gram taken three times per day.

In a preliminary study, people who used antioxidant supplements (vitamin C or vitamin E) had a lower risk of Alzheimer's disease compared with people who did not take antioxidants. Other preliminary research shows that higher blood levels of vitamin E correlate with better brain functioning in middle-aged and older adults. The possible protective effect of antioxidants may be explained by the observation that oxidative damage appears to play a role in the development of dementia. Large amounts of supplemental vitamin E may slow the progression of Alzheimer's disease. A double-blind trial found that 2,000 IU of vitamin E per day for two years extended the length of time people with moderate Alzheimer's disease were able to continue caring for themselves (e.g., bathing, dressing, and other necessary daily functions), compared with people taking a placebo.

Vitamin B1 is involved in nerve transmission in parts of the brain (called cholinergic neurons) that deteriorate in Alzheimer's disease. The activity of vitamin B1-dependent enzymes has been found to be lower in the brains of people with Alzheimer's disease. It has therefore been suggested that vitamin B1 supplementation could slow the progression of Alzheimer's disease. Two double-blind trials have reported small but significant improvements of mental function in people with Alzheimer's disease who took 3 grams a day of vitamin B1, compared to those who took placebo. However, another double-blind trial using the same amount for a year found no effect on mental function.

Phosphatidylserine (PS), which is related to lecithin, is a naturally occurring compound present in the brain. Although it is not a cure, 100 mg of PS taken three times per day has been shown to improve mental function, such as the ability to remember names and to recall the location of frequently misplaced objects, in people with Alzheimer's disease. However, subsequent studies have not validated these results. In one double-blind trial, only the most seriously impaired participants received benefits from taking PS; people with moderate Alzheimer's disease did not experience significant improvements in cognitive function. In another double-blind trial, people with Alzheimer's disease who took 300 mg of PS per day for eight weeks had better improvement in overall well-being

than those who took placebo, but there were no significant differences in mental function tests. In another double-blind trial, 200 mg of PS taken twice daily produced short-term improvements in mental function (after six to eight weeks), but these effects faded toward the end of the six-month study period.

A further concern is that the PS used in these studies was obtained from cow brain, which has been found in some instances to be infected with the agents that cause mad-cow disease. The human variant of mad cow disease, called Creutzfeldt-Jakob disease, is rare, but fatal and is thought to be transmitted to people who consume organs and meat from infected cows. A plant source of PS is also available. However, the chemical structure of the plant form of PS differs from the form found in cow brain. In a preliminary study, plant-derived PS was no more effective than a placebo at improving the memory of elderly people.

A double-blind trial of 20 to 25 grams per day of lecithin failed to produce improvements in mental function in people with Alzheimer's disease. However, there were improvements in a subgroup of people who did not fully comply with the program, suggesting that lower amounts of lecithin may possibly be helpful. Lecithin supplementation has also been studied in combination with a cholinesterase inhibitor drug called tacrine, with predominantly negative results.

DMAE (2-dimethylaminoethanol) may increase levels of the brain neurotransmitter acetylcholine. In one preliminary trial, people with senile dementia were given DMAE supplements of 600 mg three times per day for four weeks. The participants did not show any changes in memory, though some did show positive behaviour changes. However, a subsequent double-blind trial found no significant benefit from DMAE supplementation in people with Alzheimer's disease.

In a preliminary report, two people with a hereditary form of Alzheimer's disease received daily: coenzyme Q10 (60 mg), iron (150 mg of sodium ferrous citrate), and vitamin B6 (180 mg). Mental status improved in both patients, and one became almost normal after six months.

Studies in the test tube have shown that zinc can cause biochemical changes associated with Alzheimer's disease. For that reason, some scientists have been concerned that zinc supplements might promote the development of this disease. However, in a study of four people with Alzheimer's disease, supplementation with zinc (30 mg per day) actually resulted in improved mental function. In a recent review article, one of the leading zinc researchers concluded that zinc does not cause or worsen Alzheimer's disease.

A small, preliminary trial showed that oral NADH (10 mg per day) improved mental function in people with Alzheimer's disease. Further studies are necessary to confirm these early results.

Some researchers have found an association between Alzheimer's disease and deficiencies of vitamin B12 and folic acid; however, other researchers consider such deficiencies to be of only minor importance. In a study of elderly Canadians, those with low blood levels of folate were more likely to have dementia of all types, including Alzheimer's disease, than those with higher levels of folate. Little is known about whether supplementation with either vitamin would significantly help people with this

disease. Nonetheless, it makes sense for people with Alzheimer's disease to be medically tested for vitamin B12 and folate deficiencies and to be treated if they are deficient.

Most, but not all, studies have found that people with Alzheimer's disease have lower blood DHEA levels than do people without the condition. Emerging evidence suggests a possible benefit of DHEA supplementation in people with Alzheimer's disease. In one double-blind trial, participants who took 50 mg twice daily for six months had significantly better mental performance at the three-month mark than those taking placebo. At six months, statistically significant differences between the two groups were not seen, but results still favoured DHEA. In another clinical trial, massive amounts of DHEA (1,600 mg per day for four weeks) failed to improve mental function or mood in elderly people with or without Alzheimer's disease. It is likely that the amount of DHEA used in this trial was far in excess of an appropriate amount, illustrating that more is not always better.

Herbs that may be helpful

An extract made from the leaves of the Ginkgo Biloba tree is an approved treatment for early-stage Alzheimer's disease in Europe. While not a cure, Ginkgo Biloba extract (GBE) may improve memory and quality of life and slow progression in the early stages of the disease. In addition, four double-blind trials have shown that GBE is helpful for people in early stages of Alzheimer's disease, as well as for those experiencing another form of dementia known as multi-infarct dementia. One trial reported no effect of GBE supplementation in the treatment of Alzheimer's disease, vascular dementia or age-associated memory impairment. However, the results of this trial have been criticized, since analysis of the results does not separate those patients with Alzheimer's disease or vascular dementia from those with age-associated memory impairment. A comparison of placebo-controlled trials of ginkgo for Alzheimer's disease concluded that the herb compared favourably with two prescription drugs, donepezil and tacrine, commonly used to treat the condition. Research studies have used 120 to 240 mg of GBE, standardized to contain 6% terpene lactones and 24% flavones glycosides per day, generally divided into two or three portions. GBE may need to be taken for six to eight weeks before desired actions are noticed.

Huperzine A is a substance found in huperzia (Huperzia serrata), a Chinese medicinal herb. In a placebo-controlled trial, 58% of people with Alzheimer's disease had significant improvement in memory and mental and behavioural function after taking 200 mcg of huperzine A twice per day for eight weeks—a statistically significant improvement compared to the 36% who responded to placebo. Another double-blind trial using injected huperzine A confirmed a positive effect in people with dementia, including, but not limited to, Alzheimer's disease. Yet another double-blind trial found that huperzine A, given at levels of 100 to 150 mcg two to three times per day for four to six weeks, was more effective at improving minor memory loss associated with age-related cognitive decline than the drug piracetam. This study found that huperzine A was not effective in relieving symptoms of Alzheimer's disease. Clearly, more research is needed before the usefulness of huperzine A for Alzheimer's disease is confirmed.

Lesser periwinkle contains the alkaloid vincamine. Supplementation with a semi-synthetic derivative of vincamine, known as vinpocentine, showed no benefit for people

with Alzheimer's disease in a preliminary study, but vincamine itself was shown to be beneficial in a later double-blind trial.

In a double-blind trial, supplementation with an extract of lemon balm (Melissa officinalis) for 16 weeks significantly improved cognitive function and significantly reduced agitation, compared with a placebo, in people with Alzheimer's disease. The amount of lemon balm used was 60 drops per day of a 1:1 tincture, standardized to contain at least 500 mcg per ml of citral.

Anaemia

Anaemia is a general term for a category of blood conditions that affect the red blood cells or the oxygen-carrying haemoglobin they contain.

In anaemia, there is either a reduction in the number of red blood cells in circulation or a decrease in the amount or quality of haemoglobin. There are many causes of anaemia, including severe blood loss, genetic disorders, and serious diseases. (See iron deficiency anaemia, pernicious anaemia [vitamin B12-related], and sickle cell anaemia.) Anyone with unexplained anaemia should have the cause determined by a qualified doctor.

Some athletes appear to have anaemia when their blood is tested, but this may be a normal adaptation to the stress of exercise, which does not need treatment. Further evaluation by a qualified doctor is necessary.

What are the symptoms of anaemia?

Some common symptoms of anaemia include fatigue, lethargy, weakness, poor concentration, and frequent colds. A peculiar symptom of iron-deficiency anaemia, called pica, is the desire to eat unusual things, such as ice, clay, cardboard, paint, or starch. Advanced anaemia may also result in light-headedness, headaches, ringing in the ears (tinnitus), irritability, pale skin, unpleasant sensations in the legs with an uncontrollable urge to move them, and getting out of breath easily.

Dietary changes that may be helpful

Severe protein deficiency can cause anaemia because protein is required for normal production of haemoglobin and red blood cells. However, this deficiency is uncommon in healthy people living in developed countries.

Thalassemia is an inherited type of anaemia that is most common in people of Mediterranean descent. Children with severe thalassemia often have reduced growth rates that may be partially due to inadequate diets. This problem is primarily found in developing countries.

Nutritional supplements that may be helpful

Deficiencies of iron, vitamin B12, and folic acid are the most common nutritional causes of anaemia. Although rare, severe deficiencies of several other vitamins and minerals, including vitamin A, vitamin B2, vitamin B6, vitamin C, and copper, can also cause anaemia by various mechanisms. Rare genetic disorders can cause anaemia's that may improve with large amounts of supplements such as vitamin B1.

Taurine has been shown, in a double-blind study, to improve the response to iron therapy in young women with iron-deficiency anaemia. The amount of taurine used was 1,000 mg per day for 20 weeks, given in addition to iron therapy, but at a different time of the day. The mechanism by which taurine improves iron utilization is not known.

Hemolytic anaemia refers to a category of anaemia in which red blood cells become fragile and undergo premature death. Vitamin E deficiency, though quite rare, can cause hemolytic anaemia because vitamin E protects the red blood cell membrane from oxidative damage. Vitamin E deficiency anaemia usually affects only premature infants and children with cystic fibrosis. Preliminary studies have reported that large amounts (typically 800 IU per day) of vitamin E improve hemolytic anaemia caused by a genetic deficiency of the enzyme glucose-6-phosphate dehydrogenase (G6PD) and anaemia caused by kidney dialysis.

People with severe thalassemia who receive regular blood transfusions become overloaded with iron, which increases damaging free radical activity and lowers antioxidant levels in their bodies. Some people with milder forms of thalassemia may also have iron overload. Iron supplements should be avoided by people with thalassemia unless iron deficiency is diagnosed. Preliminary studies have found that oral supplements of 200 to 600 IU per day of vitamin E reduce free radical damage to red blood cells in thalassemia patients. However, only injections of vitamin E have reduced the need for blood transfusions caused by thalassemia.

Test tube studies have shown that propionyl-L-carnitine (a form of L-Carnitine) protects red blood cells of people with thalassemia against free radical damage. In a preliminary study, children with beta thalassemia major who took 100 mg of L-Carnitine per 2.2 pounds of body weight per day for three months had a significantly decreased need for blood transfusions. Some studies have found people with thalassemia to be frequently deficient in folic acid, vitamin B12, and zinc. Researchers have reported improved growth rates in zinc-deficient thalassemic children who were given zinc supplements of 22.5 to 90 mg per day, depending on age. Magnesium has been reported to be low in thalassemia patients in some, but not all, studies. A small, preliminary study reported that oral supplements of magnesium, 7.2 mg per 2.2 pounds of body weight per day, improved some red blood cell abnormalities in thalassemia patients.

Sideroblastic anaemia refers to a category of anaemia featuring a build-up of iron-containing immature red blood cells (sideroblasts). One type of sideroblastic anaemia is due to a genetic defect in an enzyme that uses vitamin B6 as a cofactor. Vitamin B6 supplements of 50 to 200 mg per day partially correct the anaemia, but must be taken for life.

Angina

Angina, or angina pectoris, is chest pain due either to reduced blood flow to the heart or to certain other abnormalities of heart function.

Hardening (atherosclerosis) of the coronary arteries that feed the heart is usually the underlying problem. Spasms of the coronary arteries may also cause angina.

There are three main types of angina. The first is called stable angina. This type of chest pain comes on during exercise and is both common and predictable. Stable angina is most often associated with atherosclerosis. A second type, called variant angina, can occur at rest or during exercise. This type is primarily due to sudden coronary artery spasm, though atherosclerosis may also be a component. The third, most severe type is called unstable angina. This angina occurs with no predictability and can quickly lead to a heart attack. Anyone with significant, new chest pain or a worsening of previously mild angina must seek medical care immediately.

It is important for treatment and prevention of angina (and for overall health) to learn more about atherosclerosis

What are the symptoms of angina?

Common symptoms of angina include a squeezing pressure, heaviness, ache, or burning pain (like indigestion) in the chest that occur for 5 to 30 minutes at a time. These sensations are usually felt behind the breastbone but may also be felt in the jaw, neck, arms, back, or upper abdomen. Some people may also have difficulty in breathing or may become pale and sweaty. Symptoms of angina usually appear during physical exertion, after heavy meals, and with heightened emotional states, such as anger, frustration, shock, and excitement.

Dietary changes that may be helpful

Coffee should probably be avoided. Drinking five or more cups of coffee per day has been shown to increase the risk of angina, although effects of different forms of coffee on angina are unclear.

Lifestyle changes that may be helpful

Cigarette smoking causes damage to the coronary arteries and, in this way, can contribute to angina. It is critical for anyone with angina who smokes to stop smoking. Smoking has also been shown to reduce the effectiveness of treatments for angina. Second-hand smoke should be avoided as well.

Increasing physical exercise has been clearly demonstrated to reduce symptoms of angina, as well as to relieve its underlying causes. One study found that intense exercise for ten minutes daily was as effective as beta-blocker drugs in a group of patients with angina. Anyone with angina or any other heart condition, as well as anyone over the age of 40, should consult a doctor before beginning an exercise program.

Nutritional supplements that may be helpful

L-Carnitine is an amino acid needed to transport fats into the mitochondria (the place in the cell where fats are turned into energy). Adequate energy production is essential for normal heart function. Several studies using 1 gram of L-Carnitine two to three times per day showed an improvement in heart function and a reduction in symptoms of angina. Coenzyme Q10 also contributes to the energy-making mechanisms of the heart. Angina patients given 150 mg of coenzyme Q10 each day have experienced greater ability to

exercise without experiencing chest pain. This has been confirmed in independent investigations.

Low levels of antioxidant vitamins in the blood, particularly vitamin E, are associated with greater rates of angina. This is true even when smoking and other risk factors for angina are taken into account. Early short-term studies using 300 IU (International Units) per day of vitamin E could not find a beneficial action on angina. A later study supplementing small amounts of vitamin E (50 IU per day) for longer periods of time showed a minor benefit in people suffering angina. Those affected by variant angina have been found to have the greatest deficiency of vitamin E compared with other angina patients.

Nitro-glycerine and similar drugs cause dilation of arteries by interacting with nitric oxide, a potent stimulus for dilation. Nitric oxide is made from Arginine, a common amino acid. Blood cells in people with angina are known to make insufficient nitric oxide, which may in part be due to abnormalities of Arginine metabolism. Taking 2 grams of Arginine three times per day for as little as three days has improved the ability of angina sufferers to exercise. Seven of ten people with severe angina improved dramatically after taking 9 grams of Arginine per day for three months in an uncontrolled study. Detailed studies have investigated the mechanism of Arginine and have proven it operates by stimulating blood vessel dilation.

N-acetyl cysteine (NAC) may improve the effects of nitro-glycerine in people with angina. People with unstable angina who took 600 mg of NAC three times daily in combination with a nitro-glycerine transdermal (skin) patch for four months had significantly lower rates of subsequent heart attacks than did people who used either therapy alone or placebo.

Magnesium deficiency may be a contributing factor for spasms that occur in coronary arteries, particularly in variant angina. While studies have used injected magnesium to stop such attacks effectively, it is unclear whether oral magnesium would be effective in preventing or treating blood vessel spasms. One double-blind study of patients with exercise-induced angina, however, showed that oral magnesium supplementation (365 mg twice a day) for 6 months significantly reduced the incidence of exercise-induced chest pain, compared with a placebo.

In a controlled study, men with severe coronary heart disease were given an exercise test, after which they took either 15 grams of ribose or a placebo four times daily for three days. Compared with the initial test, men taking ribose were able to exercise significantly longer before experiencing chest pain and before abnormalities appeared on their electrocardiogram (ECG), but only the ECG changes were significantly improved compared with those in the placebo group. Sports supplement manufacturers recommend 1 to 10 grams per day of ribose, while heart disease patients and people with rare enzyme deficiencies have been given up to 60 grams per day.

Bromelain has been reported in a preliminary study to relieve angina. In that study, 600 people with cancer were receiving bromelain (400 to 1,000 mg per day). Fourteen of those individuals had been suffering from angina. In all 14 cases, the angina disappeared within 4 to 90 days after starting bromelain. However, as there was no control group in the study, the possibility of a placebo effect cannot be ruled out. Bromelain is known to prevent excessive stickiness of blood platelets, which is believed to be one of the triggering factors for angina.

Fish oil, which contains the fatty acids known as EPA and DHA, has been studied in the treatment of angina. In some studies, enough fish oil to provide a total of about 3 grams of EPA and 2 grams of DHA has reduced chest pain as well as the need for nitroglycerine; other investigators could not confirm these findings. People who take fish oil may also need to take vitamin E to protect the oil from undergoing potentially damaging oxidation in the body. It is not known how much vitamin E is needed to prevent such oxidation; the amount required would presumably depend on the amount of fish oil used. In one study, 300 IU of vitamin E per day prevented oxidation damage in individuals taking 6 grams of fish oil per day.

Herbs that may be helpful

The fruit, leaves, and flowers of the hawthorn tree contain flavonoids, including oligomeric procyanidins, which may protect blood vessels from damage. A 60 mg hawthorn extract containing 18.75% oligomeric procyanidins taken three times per day improved heart function and exercise tolerance in angina patients in a small clinical trial.

Khella is an African plant that contains spasm-relieving compounds, including khellin. Purified khellin was shown to be helpful in relieving angina in preliminary studies in the 1940s and 1950s. It is unknown whether the whole herb would have the same effects. Due to the potential side effects of khella, people with angina should consult with a physician knowledgeable in botanical medicine before taking it.

Kudzu is used in modern Chinese medicine as a treatment for angina. Standardized root tablets (10 mg tablet is equivalent to 1.5 grams of the crude root) are sometimes used for angina pectoris in the amount of 30 to 120 mg per day.

Anxiety

Anxiety describes any feeling of worry or dread, usually about events that might potentially happen. Some anxiety about stressful events is normal. However, in some people, anxiety interferes with the ability to function.

Some people who think they are anxious may actually be depressed. Because of all these factors, it is important for people who are anxious to seek expert medical care. Natural therapies can be one part of the approach to helping relieve mild to moderate anxiety.

What are the symptoms of anxiety?

Physical symptoms of anxiety include fatigue, insomnia, stomach problems, sweating, racing heart, rapid breathing, shortness of breath, and irritability.

Dietary changes that may be helpful

All sources of caffeine should be avoided, including coffee, tea, chocolate, caffeinated sodas, and caffeine-containing medications. People with high levels of anxiety appear to be more susceptible to the actions of caffeine.

Nutritional supplements that may be helpful

Inositol has been used to help people with anxiety that have panic attacks. Up to 4 grams three times per day was reported to control such attacks in a double-blind trial. Inositol (18 grams per day) has also been shown in a double-blind trial to be effective at relieving the symptoms of obsessive-compulsive disorder.

An isolated double-blind trial found that supplementation with a multivitamin-mineral supplement for four weeks led to significant reductions in anxiety and perceived stress compared to placebo.

Many years ago, magnesium was reported to be relaxing for people with mild anxiety. Typically, 200 to 300 mg of magnesium is taken two to three times per day. Some doctors recommend soaking in a hot tub containing 1–2 cups of magnesium sulphate crystals (Epsom salts) for 15 to 20 minutes, though support for this approach remains anecdotal.

Niacinamide (a form of Vitamin B3) has been shown in animals to work in the brain in ways similar to drugs such as benzodiazepines (Valium®-type drugs), which are used to treat anxiety. One study found that Niacinamide (not niacin) helped people get through withdrawal from benzodiazepines—a common problem. A reasonable amount of Niacinamide to take for anxiety, according to some doctors, is up to 500 mg four times per day.

Herbs that may be helpful

Several plants, known as "nervines" (nerve tonics), are used in traditional herbal medicine for people with anxiety, with few reports of toxicity. Most nervines have not been rigorously investigated by scientific means to confirm their efficacy. However, one study found that a combination of the nervines valerian and passion flower reduced symptoms in people suffering from anxiety. In a double-blind study, 45 drops per day of an extract of passion flower taken for four weeks was as effective as 30 mg per day of oxazepam (Serax®), a medication used for anxiety.

Other nervines include oats (oat straw), hops, passion flower, American skullcap, wood betony, motherwort, pennyroyal, and linden.

St. John's Wort has been reported in one double-blind study to reduce anxiety.

An old folk remedy for anxiety, particularly when it causes insomnia, is chamomile tea. There is evidence from test tube studies that chamomile contains compounds with a calming action. There are also animal studies that suggest a benefit from chamomile for anxiety, but no human studies support this belief. Often one cup of tea is taken three or more times per day.

Warning: Kava should only be taken with medical supervision. Kava is not for sale in certain parts of the world.

Until recently, the pre-eminent botanical remedy for anxiety was kava, an herb from the South Pacific. It has been extensively studied for this purpose. One 100 mg capsule standardized to 70% kava-lactones is given three times per day in many studies. Preliminary[14] and double-blind trials have validated the effectiveness of kava for people with anxiety, including menopausal women. A previous study found kava to be just as effective as benzodiazepines over the course of six weeks. The latest research shows

that use of kava for up to six months is safe and effective compared with placebo. Although kava rarely causes side effects at the given amount, it may cause problems for some people if combined for more than a few days with benzodiazepines.

Asthma

Asthma is a lung disorder in which spasms and inflammation of the bronchial passages restrict the flow of air in and out of the lungs.

The number of people with asthma and the death rate from this condition have been increasing since the late 1980s. Environmental pollution may be one of the causes of this growing epidemic. Work exposure to flour or cotton dust, animal fur, smoke, and a wide variety of chemicals has been linked to increased risk of asthma.

Findings from animal and human studies confirm that DTP (diphtheria and tetanus toxoids and pertussis) and tetanus vaccinations can induce allergic responses, and can increase the risk of allergies, including allergic asthma. An analysis of data from nearly 14,000 infants and children revealed that having a history of asthma is twice as great among those who were vaccinated with DTP or tetanus vaccines than among those who were not.

What are the symptoms of asthma?

An asthma attack usually begins with sudden fits of wheezing, coughing, or shortness of breath. However, it may also begin insidiously with slowly increasing manifestations of respiratory distress. A sensation of tightness in the chest is also common.

Dietary changes that may be helpful

A vegan (pure vegetarian) diet given for one year in conjunction with many specific dietary changes (such as avoidance of caffeine, sugar, salt, and chlorinated tap water) and combined with a variety of herbs and supplements led to significant improvement in one group of asthmatics. Although 16 out of 24 people who continued the intervention for the full year were much better and one person was actually cured, it remains unclear how much of the action was purely a result of the dietary changes compared with the many other therapies employed.

Vitamin C, an antioxidant present in fruits and vegetables, is a powerful antioxidant and anti-inflammatory. This anti-inflammatory activity may influence the development of asthma symptoms. A large preliminary study has shown that young children with asthma experience significantly less wheezing if they eat a diet high in fruits rich in vitamin C.

Studies suggest that high salt intake may have an adverse effect on asthma, particularly in men. In a small, preliminary trial, doubling salt intake for one month led to a small increase in airway reactivity (indicating a worsening of asthma) in men with asthma, as well as in non-asthmatics. Several double-blind trials have provided limited evidence of clinical improvement following a period of sodium restriction. It is difficult to compare the results of these studies because they used different amounts of sodium restriction. However, they consistently suggest that increased dietary sodium may aggravate asthma symptoms, especially in men.

Although most people with asthma do not suffer from food allergies, unrecognized food allergy can be an exacerbating factor. A medically supervised “allergy elimination diet,” followed by reintroduction of the eliminated foods, often helps identify problematic foods. A healthcare professional must supervise this allergy test because of the possibility of triggering a severe asthma attack during the reintroduction.

Some asthmatics react to food additives, such as sulphites, tartrazine (yellow dye #5), and sodium benzoate, as well as natural salicylates (aspirin-like substances found in many foods). A doctor or an allergist can help determine whether chemical sensitivities are present.

Lifestyle changes that may be helpful

Being overweight increases the risk of asthma. Obese people with asthma may improve their lung-function symptoms and overall health status by engaging in a weight-loss program. A controlled study found that weight loss resulted in significant decreases in episodes of shortness of breath, increases in overall breathing capacity, and decreases in the need for medication to control symptoms. Nutritional supplements that may be helpful.

Lycopene, an antioxidant related to beta-carotene and found in tomatoes, helps reduce the symptoms of asthma caused by exercising. In one double-blind trial, over half of people with exercise-induced asthma had significantly fewer asthma symptoms after taking capsules containing 30 mg of lycopene per day for one week compared to when they took a placebo.

Vitamin B6 deficiency is common in asthmatics. This deficiency may relate to the asthma itself or to certain asthma drugs (such as theophylline and aminophylline) that deplete vitamin B6. In a double-blind trial, 200 mg per day of vitamin B6 for two months reduced the severity of asthma in children and reduced the amount of asthma medication they needed. In another trial, asthmatic adults experienced a dramatic decrease in the frequency and severity of asthma attacks while taking 50 mg of vitamin B6 twice a day. Nonetheless, the research remains somewhat inconsistent, and one double-blind trial found that high amounts of B6 supplements did not help asthmatics who required the use of steroid drugs.

Magnesium levels are frequently low in asthmatics. Current evidence suggests that high dietary magnesium intake may be associated with better lung function and reduced bronchial reactivity. Intravenous injection of magnesium has been reported in most, but not all, double-blind trials to rapidly halt acute asthma attacks. Magnesium supplements might help prevent asthma attacks because magnesium can prevent spasms of the bronchial passages. In a preliminary trial, 18 adults with asthma took 300 mg of magnesium per day for 30 days and experienced decreased bronchial reactivity. However, a double-blind trial investigated the effects of 400 mg per day for three weeks and found a significant improvement in symptoms, but not in objective measures of airflow or airway reactivity. The amount of magnesium used in these trials was 300 to 400 mg per day (children take proportionately less based on their body weight).

Supplementation with 1 gram of vitamin C per day reduces the tendency of the bronchial passages to go into spasm, an action that has been confirmed in double-blind research. Beneficial effects of short-term vitamin C supplementation (i.e., less than three days) have been observed. In one double-blind trial, 500 mg of vitamin C per day for two days

prevented attacks of exercise-induced asthma. Two other preliminary trials found that vitamin C supplementation reduced bronchial reactivity to metacholine, a drug that causes bronchial constriction. However, other studies, including two double-blind trials, have failed to corroborate these findings. The only double-blind trial of a long duration found that vitamin C supplementation (1 gram per day for 14 weeks) reduced the severity and frequency of attacks among Nigerian adults with asthma. A buffered form of vitamin C (such as sodium ascorbate or calcium ascorbate) may work better for some asthmatics than regular vitamin C (ascorbic acid).

People with low levels of selenium have a high risk of asthma. Asthma involves free-radical damage that selenium might protect against. In a small double-blind trial, supplementation with 100 mcg of sodium selenite (a form of selenium) per day for 14 weeks resulted in clinical improvement in six of eleven patients, compared with only one of ten in the placebo group. Most doctors recommend 200 mcg per day for adults (and proportionately less for children)—a much higher, though still safe, level.
Double-blind research shows that fish oil partially reduces reactions to allergens that can trigger attacks in some asthmatics. Although a few researchers report small but significant improvements when asthmatics supplement with fish oil reviews of the research show that most fish oil studies with asthmatics come up empty-handed. It is possible that some of these trials failed because they did not last long enough to demonstrate an effect. There is evidence that children who eat oily fish may have a much lower risk of getting asthma. Moreover, in a double-blind trial, children who received 300 mg per day of fish oil (providing 84 mg of EPA and 36 mg of DHA) experienced significant improvement of asthma symptoms. It should be noted that these benefits were obtained under circumstances in which exposure to food allergens and environmental allergens was strictly controlled. Though the evidence supporting the use of fish oil remains somewhat conflicting, eating more fish and supplementing with fish oil may still be worth considering, especially among children with asthma.

In a double-blind study of people with asthma, supplementation with a proprietary extract of New Zealand green-lipped mussel (Lyprinol®) twice a day for 8 weeks significantly decreased daytime wheezing and improved airflow through the bronchi. Each capsule of Lyprinol® contains 50 mg of omega-3 fatty acids.

A study conducted many years ago showed that 80% of children with asthma had hypochlorhydria (low stomach acid). Supplementation with hydrochloric acid (HCl) in combination with avoidance of known food allergens led to clinical improvement in this preliminary trial. In more recent times, HCl has usually been supplemented in the form of betaine HCl. The amount needed depends on the severity of hypochlorhydria and on the size of a meal. Because it is a fairly strong acid, betaine HCl should be used only with medical supervision.

In some people with asthma, symptoms can be triggered by ingestion of food additives known as sulphites. Pre-treatment with a large amount of vitamin B12 (1,500 mcg orally) reduced the asthmatic reaction to sulphites in children with sulphite sensitivity in one preliminary trial. The trace mineral molybdenum also helps the body detoxify sulphites. While some doctors use molybdenum to treat selected patients with asthma, there is little published research on this treatment, and it is not known what an appropriate level of molybdenum supplementation would be. A typical American diet contains about 200 to 500 mcg per day, and preliminary short-term trials have used supplemental amounts

of 500 mcg per day. People who suspect sulphite-sensitive asthma should consult with a physician before taking molybdenum.

Quercetin, a flavonoid found in most plants, has an inhibiting action on lipoxygenase, an enzyme that contributes to problems with asthma.[67] No clinical trials in humans have confirmed whether quercetin decreases asthma symptoms. Some doctors are currently experimenting with 400 to 1,000 mg of quercetin three times per day.

Bromelain reduces the thickness of mucus, which may be beneficial for those with asthma, though clinical actions in asthmatics remain unproven.

Some researchers have suggested that asthma attacks triggered by exercise might be caused by free-radical damage caused by the exercise. Beta-carotene is an antioxidant that protects against free-radical damage. Israeli researchers reported that 64 mg per day of natural beta-carotene for one week in a double blind trial protected over half of a group of asthmatics who experienced attacks as a result of exercise. More research is needed to confirm this promising finding.

The oral administration of a thymus extract known as thymomodulin has been shown in preliminary and double-blind clinical trials to improve the symptoms and course of asthma. Presumably this clinical improvement is the result of restoration of proper control over immune function.

Herbs that may be helpful

There are two categories of herbs generally used for people with asthma. These are herbs that help dilate the airways and herbs that are anti-inflammatory.

Eclectic physicians—doctors in turn-of-the-century North America who used herbs as their main medicine—considered lobelia to be one of the most important plant medicines. Traditionally, it was used by Eclectics to treat coughs and spasms in the lungs from all sorts of causes. A plant that originates in Africa, khella, is also considered an anti-spasmodic like lobelia. Though it is not strong enough to stop acute asthma attacks, khella has been recommended by German physicians practicing herbal medicine as possibly helpful for chronic asthma symptoms.

One double-blind trial has investigated the effects of the Ayurvedic herb boswellia in people with acute bronchial asthma.[77] Participants took 300 mg of powdered boswellia resin extract or placebo three times daily for six weeks. By the end of the study, the number of asthma attacks was significantly lower in the group taking boswellia. Moreover, objective measurements of breathing capacity were also significantly improved by boswellia.

Two preliminary trials have shown picrorhiza to be of benefit in asthma. However, a follow-up double-blind trial did not confirm these earlier results. A range of 400 to 1,500 mg of powdered, encapsulated picrorhiza per day has been used in a variety of trials. It remains unclear how effective picrorhiza is for people with asthma.

Different preparations of tylophora, including crude leaf, tincture, and capsule, have been tested in human clinical trials. One double-blind trial had people with bronchial asthma chew and swallow one tylophora leaf (150 mg of the leaf by weight) per day for six days. Participants were also given a comparable placebo to be chewed and

swallowed during a different six-day period. When consuming tylophora, over half of the people reported experiencing moderate to complete relief of their asthma symptoms, compared to only about 20% reporting relief when consuming the placebo. In a follow-up double-blind trial, an alcoholic extract of crude tylophora leaves had comparable effects to that of chewing the crude leaf. Another double-blind trial found 350 mg of tylophora leaf powder per day increased the lungs' capacity for oxygen and reduced night time shortness of breath, but was not as effective as an anti-asthmatic drug combination. A fourth double-blind trial found no significant changes in lung volume measurements or asthmatic symptoms after treatment with 400 mg per day tylophora.

A controlled trial on children with bronchial asthma suggested that 25 drops of ivy leaf extract given twice daily was effective in increasing the amount of oxygen in the lungs after only three days of use. However, the frequency of cough and shortness of breath symptoms did not change during the short trial period.

Ginkgo Biloba extracts (GBE) have been considered a potential therapy for asthma. This is because the extracts block the action of platelet-activating factor (PAF); a compound the body produces that in part causes asthma symptoms. A trial using isolated ginkgolides from ginkgo (not the whole extract) found they reduced asthma symptoms. A controlled trial used a highly concentrated tincture of ginkgo leaf and found this preparation helped decrease asthma symptoms. For asthma, 120 to 240 mg of standardized GBE or 3 to 4 ml of regular tincture three times daily can be used.

In three preliminary trials on people with asthma, a traditional Japanese herbal formula known as saiboku-to has been shown to reduce symptoms and enable some people to reduce their use of steroid medication. Saiboku-to has been extensively studied in the laboratory and has been shown to have numerous anti-inflammatory actions. Some of these studies used 2.5 grams three times per day of saiboku-to. A traditional Chinese or Japanese medicine practitioner should be consulted for more information. Saiboku-to contains bupleurum, hoelen, pinellia, magnolia, Asian ginseng, Asian skullcap, liquorice, perilla, ginger and jujube.

Onion may act as an anti-inflammatory in people with asthma. Human studies have shown onion can be a strong anti-inflammatory. However, some people with asthma may experience an exacerbation of symptoms if they are allergic to onion and are exposed to it.

Traditionally, herbs that have a soothing action on bronchioles are also used for asthma. These include marshmallow, mullein, hyssop, and liquorice. Elecampane has been used traditionally to treat coughs associated with asthma.

Warning: Ephedra should only be taken with medical supervision. Ephedra is not for sale in certain parts of the world.

Ephedrine, an alkaloid extracted from Ephedra sinica (also known as ma huang), is an approved over-the-counter (OTC) treatment for bronchial tightness associated with asthma. OTC drugs containing ephedrine can be safely used by adults in the amount of 12.5 to 25 mg every four hours. Adults should take a total of no more than 150 mg every 24 hours. They should refer to labels for children's dosages. Ephedrine has largely been replaced by other bronchodilating drugs, such as alupent and albuterol. Ephedra sinica

continues to be a component of traditional herbal preparations for asthma, often in amounts of 1 to 2 grams of the herb per day.

A small double-blind trial found that a constituent of coleus, called forskolin, when inhaled, could decrease lung spasms in asthmatics compared to placebo. Coleus extracts standardized to 18% forskolin are available, and 50 to 100 mg can be taken two to three times per day. Fluid extract can be taken in the amount of 2 to 4 ml three times per day. Most trials have used injected forskolin, so it is unclear whether oral ingestion of coleus extracts will provide similar benefits in the amounts recommended above.

Atherosclerosis

Atherosclerosis is hardening of the arteries, a common disease of the major blood vessels characterized by fatty streaks along the vessel walls and by deposits of cholesterol and calcium.

Atherosclerosis of arteries supplying the heart is called coronary artery disease. It can restrict the flow of blood to the heart, which often triggers heart attacks—the leading cause of death in Americans and Europeans. Atherosclerosis of arteries supplying the legs causes a condition called intermittent claudication, which is characterized by pain in the legs after walking short distances.
People with elevated cholesterol levels are much more likely to have atherosclerosis than people with low cholesterol levels. Many important nutritional approaches to protecting against atherosclerosis are aimed at lowering serum cholesterol levels.

People with diabetes are also at very high risk for atherosclerosis, as are people with elevated triglycerides and high homocysteine.

What are the symptoms of atherosclerosis?

Atherosclerosis is typically a silent disease until one of the many late-stage vascular manifestations intervenes. Some people with atherosclerosis may experience angina (chest pain) or intermittent claudication (leg cramps and pain) on exertion. Symptoms such as these develop gradually as the disease progresses.

Dietary changes that may be helpful

The most important dietary changes in protecting arteries from atherosclerosis include avoiding meat and dairy fat and avoiding foods that contain trans fatty acids (margarine, some vegetable oils, and many processed foods containing vegetable oils). Increasingly, the importance of avoiding trans fatty acids is being accepted by the scientific community. Leading researchers have recently begun to view the evidence linking trans fatty acids to markers for heart disease as “unequivocal.”

People who eat diets high in alpha-linolenic acid (ALA), which is found in canola and flaxseed oils, have higher blood levels of omega-3 fatty acids than those consuming lower amounts, which may confer some protection against atherosclerosis. In 1994, researchers conducted a study in people with a history of heart disease, using what they called the “Mediterranean” diet. The diet differed significantly from what people from Mediterranean countries actually eat, in that it contained little olive oil. Instead, the diet included a special margarine high in ALA. Those people assigned to the Mediterranean diet had a remarkable 70% reduced risk of dying from heart disease compared with the control group during the first 27 months. Similar results were also confirmed after almost

four years. The diet was high in beans and peas, fish, fruit, vegetables, bread, and cereals, and low in meat, dairy fat, and eggs. Although the authors believe that the high ALA content of the diet was partly responsible for the surprising outcome, other aspects of the diet may have been partly or even totally responsible for decreased death rates. Therefore, the success of the Mediterranean diet does not prove that ALA protects against heart disease.

A systematic review of 20 years of research evaluated the association between dietary fibre and coronary heart disease.[8] The meta-analysis portion of this review showed that regular whole grain foods are associated with a coronary heart disease risk reduction of about 26%. In general, the fibres most linked to the reduction of cholesterol levels are found in oats, psyllium seeds, fruit (pectin) and beans (guar gum). An analysis of many soluble fibre trials proves that a cholesterol lowering effect exists, but the amount the cholesterol falls is quite modest. For unknown reasons, however, diets higher in insoluble fibre (found in whole grains and vegetables and mostly unrelated to cholesterol levels) have been reported to correlate better with protection against heart disease in both men and women. Some trials have used 20 grams of additional fibre per day for several months to successfully lower cholesterol.

Independent of their action on serum cholesterol, foods that contain high amounts of cholesterol—mostly egg yolks—can induce atherosclerosis. It makes sense to reduce the intake of egg yolks. However, eating eggs does not increase serum cholesterol as much as eating saturated fat, and eggs may not increase serum cholesterol at all if the overall diet is low in fat. A decrease in atherosclerosis resulting from a pure vegetarian diet (no meat, poultry, dairy or eggs), combined with exercise and stress reduction, and has been proven by controlled medical research.
Preliminary evidence has suggested that excessive salt consumption is a risk factor for heart disease and death from heart disease in overweight people. Controlled trials are needed to confirm these observations.

Eating a diet high in refined carbohydrates (e.g., white flour, white rice, simple sugars) appears to increase the risk of coronary heart disease, and thus of heart attacks, especially in overweight women.[17] However, controlled trials of reducing refined carbohydrate intake to prevent heart disease have not been attempted to confirm these preliminary findings.

Lifestyle changes that may be helpful

Virtually all doctors acknowledge the abundant evidence that smoking is directly linked to atherosclerosis and heart disease. Quitting smoking protects many people from atherosclerosis and heart disease, and is a critical step in the process of disease prevention.

Obesity, type A behaviour (time conscious, impatient, and aggressive), stress, and sedentary lifestyle are all associated with an increased risk of atherosclerosis; interventions designed to change these risk factors are linked to protection from this condition.

Aggressive verbal or physical responses when angry have been consistently related to coronary atherosclerosis in numerous preliminary studies. A low level of social support, especially when combined with a high level of outwardly expressed anger has also been associated with accelerated progression of coronary atherosclerosis.

Nutritional supplements that may be helpful

Tocotrienols may offer protection against atherosclerosis by preventing oxidative damage to LDL cholesterol. In a double-blind trial in people with severe atherosclerosis of the carotid artery—the main artery supplying blood to the head—tocotrienol administration (200 mg per day) reduced the level of lipid peroxides in the blood. Moreover, people receiving tocotrienols for 12 months had significantly more protection against atherosclerosis progression and in some cases reductions in the size of their atherosclerotic plaques, compared with those taking a placebo.

Supplementation with fish oil, rich in omega-3 fatty acids, has been associated with favourable changes in various risk factors for atherosclerosis and heart disease in some, but not all, studies. A double-blind trial showed that people with atherosclerosis who took fish oil (6 grams per day for 3 months and then 3 grams a day for 21 months) had significant regression of atherosclerotic plaques and a decrease in cardiovascular events (e.g., heart attack and stroke) compared with those who did not take fish oil. These results contradict the findings of an earlier controlled trial in which fish oil supplementation for two years (6 grams per day) did not promote major favourable changes in the diameter of atherosclerotic coronary arteries.

In some studies, people who consumed more selenium in their diet had a lower risk of heart disease. In one double-blind report, people who had already had one heart attack were given 100 mcg of selenium per day or placebo for six months. At the end of the trial, there were four deaths from heart disease in the placebo group but none in the selenium group; however, the number of people was too small for this difference to be statistically significant. Some doctors recommend that people with atherosclerosis supplement with 100–200 mcg of selenium per day.

Experimentally increasing homocysteine levels in humans has led to temporary dysfunction of the cells lining blood vessels. Researchers are concerned this dysfunction may be linked to atherosclerosis and heart disease. Vitamin C has been reported in one controlled study to reverse the dysfunction caused by increases in homocysteine. Vitamin C also protects LDL.

Despite the protective mechanisms attributed to vitamin C, some research has been unable to link vitamin C intake to protection against heart disease. These negative trials have mostly been conducted using people who consume 90 mg of vitamin C per day or more—a level beyond which further protection of LDL may not occur. Studies of people who eat foods containing lower amounts of vitamin C have been able to show a link between dietary vitamin C and protection from heart disease. Therefore, leading vitamin C researchers have begun to suggest that vitamin C may be important in preventing heart disease, but only up to 100–200 mg of intake per day. In a double-blind trial, supplementation with 250 mg of timed-release vitamin C twice daily for three years resulted in a 15% reduction in the progression of atherosclerosis, compared with placebo. Many doctors suggest that people take vitamin C—often 1 gram per day—despite the fact that research does not yet support levels higher than 500 mg per day.

Vitamin E is an antioxidant that serves to protect LDL from oxidative damage and has been linked to prevention of heart disease in double-blind research. Many doctors recommend 400–800 IU of vitamin E per day to lower the risk of atherosclerosis and heart attacks. However, some leading researchers suggest taking only 100–200 IU per

day, as studies that have explored the long-term effects of different supplemental levels suggest no further benefit beyond that amount, and research reporting positive effects with 400–800 IU per day have not investigated the effects of lower intakes. In a double-blind trial, people with high cholesterol who took 136 IU of natural vitamin E per day for three years had 10% less progression of atherosclerosis compared with those taking placebo.

Blood levels of an amino acid called homocysteine have been linked to atherosclerosis and heart disease in most research, though uncertainty remains about whether elevated homocysteine actually causes heart disease. Although some reports have found associations between homocysteine levels and dietary factors, such as coffee and protein intakes, evidence linking specific foods to homocysteine remains preliminary. Higher blood levels of vitamin B6, vitamin B12, and folic acid are associated with low levels of homocysteine and supplementing with these vitamins lowers homocysteine levels.

While several trials have consistently shown that B6, B12, and folic acid lower homocysteine, the amounts used vary from study to study. Many doctors recommend 50 mg of vitamin B6, 100–300 mcg of vitamin B12, and 500–800 mcg of folic acid. Even researchers finding only inconsistent links between homocysteine and heart disease have acknowledged that a B vitamin might offer protection against heart disease independent of the homocysteine-lowering effect.[61] In one trial, people with normal homocysteine levels had demonstrable reversal of atherosclerosis when supplementing B vitamins (2.5 mg folic acid, 25 mg vitamin B6, and 250 mcg of vitamin B12 per day).

For the few cases in which vitamin B6, vitamin B12, and folic acid fail to normalize homocysteine, adding 6 grams per day of betaine (trimethylglycine) may be effective. Of these four supplements, folic acid appears to be the most important. Attempts to lower homocysteine by simply changing the diet rather than by using vitamin supplements have not been successful.

Quercetin, a flavonoid, protects LDL cholesterol from damage. While several preliminary studies have found that eating foods high in quercetin lowers the risk of heart disease, the research on this subject is not always consistent, and some research finds no protective link. Quercetin is found in apples, onions, black tea, and as a supplement. In some studies, dietary amounts linked to protection from heart disease are as low as 35 mg per day.

Though low levels (2 grams per day) of evening primrose oil appear to be without action, 3–4 grams per day have lowered cholesterol in double-blind research. Lowering cholesterol levels should in turn reduce the risk of atherosclerosis.

Preliminary research shows that chondroitin sulphate may prevent atherosclerosis in animals and humans and may also prevent heart attacks in people who already have atherosclerosis. However, further research is needed to determine the value of chondroitin sulphate supplements for preventing or treating atherosclerosis.

Preliminary studies have found that people who drink red wine, which contains resveratrol, are at lower risk of death from heart disease. Because of its antioxidant activity and its effect on platelets, some researchers believe that resveratrol is the protective agent in red wine. Resveratrol research remains very preliminary, however,

and as yet there is no evidence that the amounts found in supplements help prevent atherosclerosis in humans.

In 1992, a Finnish study found a strong link between unnecessary exposure to iron and increased risk for heart disease. Since then many studies have not found that link, though perhaps an equal number have been able to confirm the outcome of the original report. One 1999 analysis of 12 studies looking at iron status and heart disease found no overall relationship, though another 1999 analysis of published studies came to a different conclusion. While the effect of unnecessary exposure to iron, including iron supplements, on the risk of heart disease remains unclear, there is no benefit in supplementing iron in the absence of a diagnosed deficiency.

The carotenoid, lycopene, has been found to be low in the blood of people with atherosclerosis, particularly if they are smokers. Although no association between atherosclerosis and blood level of any other carotenoid (e.g., beta-carotene) was found, the results of this study suggested a protective role for lycopene. Lycopene is present in high amounts in tomatoes.

Herbs that may be helpful

Many actions associated with herbal supplements may help prevent or potentially alleviate atherosclerosis. Herbs such as garlic and ginkgo appear to directly affect the hardened arteries by multiple mechanisms. Herbs such as psyllium, guggul, and fenugreek reduce cholesterol and other lipid levels in the blood—known risk factors for hardened arteries. A related group are herbs, including green tea, prevents the oxidation of cholesterol, an important step in protecting against atherosclerosis. Finally, there are herbs such as ginger and turmeric that reduce excessive stickiness of platelets, thereby reducing atherosclerosis.

Garlic has been shown to prevent atherosclerosis in a four-year double-blind trial. The preparation used, standardized for 0.6% allicin content, provided 900 mg of standardized garlic powder per day. The people in this trial were 50 to 80 years old, and the benefits were most notable in women. This trial points to the long-term benefits of garlic to both prevent and possibly slow the progression of atherosclerosis in people at risk.

Garlic has also lowered cholesterol levels in double-blind research, though more recently, some double-blind trials have not found garlic to be effective. Some of the negative trials have flaws in their design. Nonetheless, the relationship between garlic and cholesterol-lowering is somewhat unclear.

Garlic has also been shown to prevent excessive platelet adhesion in humans. Allicin, often considered the main active component of garlic, is not alone in this action. The constituent known as ajoene has also shown beneficial effects on platelets. Aged garlic extract, but not raw garlic, has been shown, to prevent oxidation of LDL cholesterol in humans, an event believed to be a significant factor in the development of atherosclerosis.

Ginkgo may reduce the risk of atherosclerosis by interfering with a chemical the body sometimes makes in excess, called platelet activating factor (PAF). PAF stimulates platelets to stick together too much; ginkgo stops this from happening. Ginkgo also increases blood circulation to the brain, arms, and legs.

Garlic and ginkgo also decrease excessive blood coagulation. Both have been shown in double-blind and other controlled trials to decrease the overactive coagulation of blood that may contribute to atherosclerosis.

Guggul has been less extensively studied, but double-blind evidence suggests it can significantly improve cholesterol and triglyceride levels in people. Numerous medicinal plants and plant compounds have demonstrated an ability to protect LDL cholesterol from being damaged by free radicals. Garlic, ginkgo, and guggul are of particular note in this regard. Garlic and ginkgo have been most convincingly shown to protect LDL cholesterol in humans.

Several other herbs have been shown in research to lower lipid levels. Of these, psyllium has the most consistent backing from multiple double-blind trials showing lower cholesterol and triglyceride levels. The evidence supporting the ability of fenugreek to lower lipid levels is not as convincing, coming from preliminary studies only.

Since oxidation of LDL cholesterol is thought to be important in causing or accelerating atherosclerosis, and green tea protects against oxidation, this herb may have a role in preventing atherosclerosis. However, while some studies show that green tea is an antioxidant in humans, others have not been able to confirm that it protects LDL cholesterol from damage. Much of the research documenting the health benefits of green tea is based on the amount of green tea typically drunk in Asian countries—about three cups per day (providing 240–320 mg of polyphenols).

The research on ginger's ability to reduce platelet stickiness indicates that 10 grams (approximately 1 heaping teaspoon) per day is the minimum necessary amount to be effective. Lower amounts of dry ginger, as well as various levels of fresh ginger, have not been shown to affect platelets.

Turmeric's active compound curcumin has shown potent anti-platelet activity in animal studies. It has also demonstrated this effect in preliminary human studies. In a similar vein, bilberry has been shown to prevent platelet aggregation as has peony. However, none of these three herbs has been documented to help atherosclerosis in human trials.

Butcher's broom and rosemary are not well studied as being circulatory stimulants but are traditionally reputed to have such an action that might impact atherosclerosis. While butcher's broom is useful for various diseases of veins, it also exerts effects that are protective for arteries.

Athlete's Foot

Athlete's foot is a fungal infection of the foot that can be caused by a number of different skin fungi.

Generally, athlete's foot does not cause serious problems; however, the disruption of the skin barrier can be a source of significant infections in people with impaired blood flow to the feet (such as people with diabetes) or in those with impaired immune systems. Infections of the nails are more difficult to treat than those affecting only the skin.

What are the symptoms of athlete's foot?

Symptoms of athlete's foot include a persistent, burning itch that often starts between the toes. The skin on the feet may be damp, soft, red, cracked, or peeling; the feet may also show patches of dead skin. The feet often have a strong or unusual smell, and sometimes small blisters occur on the feet.

Lifestyle changes that may be helpful

Keeping the feet dry is very important for preventing and fighting athlete's foot. After showering or bathing, thorough drying or careful use of a hair dryer is recommended. Light is also an enemy of fungi. People with athlete's foot should change socks daily to decrease contact with the fungus and should wear sandals occasionally to get sunlight exposure.

Herbs that may be helpful

Tea tree oil has been traditionally used to treat athlete's foot. One trial reported that application of a 10% tea tree oil cream reduced symptoms of athlete's foot just as effectively as drugs and better than placebo, although it did not eliminate the fungus.

The compound known as ajoene, found in garlic, is an antifungal agent. In a group of 34 people using a 0.4% ajoene cream applied once per day, 79% of them saw complete clearing of athlete's foot after one week; the rest saw complete clearing within two weeks. All participants remained cured three months later. One trial found a 1% ajoene cream to be more effective than the standard topical drug terbinafine for treating athlete's foot. Ajoene cream is not yet available commercially, but topical application of crushed, raw garlic may be a potential alternative application.

Attention Deficit–Hyperactivity Disorder

Attention deficit-hyperactivity disorder (ADD or ADHD) is defined as age-inappropriate impulsiveness, lack of concentration, and sometimes excessive physical activity.

ADHD has been associated with learning difficulties and lack of social skills. Obviously what constitutes "normal" in these areas covers a wide spectrum; thus it is unclear which child suffers true ADHD and which child is just more rambunctious or rebellious than another. No objective criteria exist to accurately confirm the presence of ADHD. ADHD often goes undiagnosed if not caught at an early age, and it affects many adults who may not be aware of their condition.

What are the symptoms of ADHD?

ADHD is generally recognized by a pattern of inattention, distractibility, impulsivity, and hyperactivity estimated to affect 3 to 5% of school-aged children. Learning disabilities or emotional problems often accompany ADHD. Children with ADHD experience an inability to sit still and pay attention in class, and they often engage in disruptive behaviour.

Dietary changes that may be helpful

The two most studied dietary approaches to ADHD are the Feingold diet and a hypoallergenic diet. The Feingold diet was developed by Benjamin Feingold, M.D., on the premise that salicylates (chemicals similar to aspirin that are found in a wide variety of foods) are an underlying cause of hyperactivity. In some studies, this hypothesis does

not appear to hold up. However, in studies where markedly different levels of salicylates were investigated, a causative role for salicylates could be detected in some hyperactive children. As many as 10 to 25% of children may be sensitive to salicylates. Parents of ADHD children can contact local Feingold Associations for more information about which foods and medicines contain salicylates.

The Feingold diet also eliminates synthetic additives, dyes, and chemicals, which are commonly added to processed foods. The yellow dye tartrazine has been specifically shown to provoke symptoms in controlled studies of ADHD-affected children. Again, not every child reacts, but enough do so that a trial avoidance may be worthwhile. The Feingold diet is complex and requires guidance from either the Feingold Association or a healthcare professional familiar with the Feingold diet.

In one study, children diagnosed with ADHD were put on a hypoallergenic diet, and those children who improved (about one-third) were then challenged with food additives. All of them experienced an aggravation of symptoms when given these additives. Other studies have shown that eliminating individual allergenic foods and additives from the diet can help children with attention problems.

Some parents believe that consuming sugar may aggravate ADHD. One study found that avoiding sugar reduced aggressiveness and restlessness in hyperactive children. Girls who restrict sugar have been reported to improve more than boys. However, a study using large amounts of sugar and aspartame (NutraSweet®) found that negative reactions to these substances were limited to just a few children. While most studies have not found sugar to stimulate hyperactivity, except in rare cases, the experimental design of these studies may not have been ideal for demonstrating an adverse effect of sugar on ADHD, if one exists. Further studies are needed.

Lifestyle changes that may be helpful

Smoking during pregnancy should be avoided, as it appears to increase the risk of giving birth to a child who develops ADHD.

Lead and other heavy-metal exposures have been linked to ADHD. If other therapies do not seem to be helping a child with ADHD, the possibility of heavy-metal exposure can be explored with a health practitioner.

Nutritional supplements that may be helpful

Some children with ADHD have lowered levels of magnesium. In a preliminary, controlled trial, children with ADHD and low magnesium status were given 200 mg of magnesium per day for six months. Compared with 25 other magnesium-deficient ADHD children, those given magnesium supplementation had a significant decrease in hyperactive behaviour.

In a double-blind study, supplementation with L-Carnitine for eight weeks resulted in clinical improvement in 54% of a group of boys with ADHD, compared with a 13% response rate in the placebo group. The amount of L-Carnitine used in this study was 100 mg per 2.2 pounds of body weight per day, with a maximum of 4 grams per day. No adverse effects were seen, although one child developed an unpleasant body odour while taking L-Carnitine. Researchers have found that this uncommon side effect of L-Carnitine can be prevented by supplementing with riboflavin. Although no serious side effects were seen in this study, the safety of long-term L-Carnitine supplementation in

children has not been well studied. This treatment should, therefore, be monitored by a physician.

A deficiency of several essential fatty acids has been observed in some children with ADHD compared with unaffected children.[17] [18] One study gave children with ADHD evening primrose oil supplements in an attempt to correct the problem. Although a degree of benefit was seen, results were not pronounced. In a 12-week double-blind study, children with ADHD were given either a placebo or a fatty-acid supplement providing daily: 186 mg of eicosapentaenoic acid (EPA), 480 mg of docosahexaenoic acid (DHA), 96 mg of gamma-linolenic acid (GLA), 864 mg of linoleic acid, and 42 mg of arachidonic acid. Compared with the placebo, the fatty-acid supplement produced significant improvements in both cognitive function and behavioural problems. No adverse effects were seen.

B vitamins, particularly vitamin B6, have also been used for ADHD. Deficient levels of vitamin B6 have been detected in some ADHD patients. In a study of six children with low blood levels of the neurotransmitter (chemical messenger) serotonin, vitamin B6 supplementation (15–30 mg per 2.2 pounds of body weight per day) was found to be more effective than methylphenidate (Ritalin®). However, lower amounts of vitamin B6 were not beneficial. The effective amount of vitamin B6 in this study was extremely large and could potentially cause nerve damage, although none occurred in this study. A practitioner knowledgeable in nutrition must be consulted when using high amounts of vitamin B6. High amounts of other B vitamins have shown mixed results in relieving ADHD symptoms.

Autism

Autism is a developmental disorder of the brain that appears in early childhood. The condition causes impairment of social interaction and communication, as well as unusual behaviours.

What are the symptoms of autism?

Symptoms vary but are characterized by a difficulty in relating to people, objects, and events. Communication problems may be present, such as a lack of eye contact or response when their name is called; fixation on specific subjects or toys; difficulty with changes to routine or surroundings; and repetitive body movements, such as head banging or hand flapping.

Dietary changes that may be helpful

Preliminary research suggests that some autistic children may be allergic or sensitive to certain foods and that removal of these foods from the diet has appeared to improve some behaviour. As a result, one prominent doctor has recommended a trial hypoallergenic diet. Such a trial requires supervision by a doctor.

Nutritional supplements that may be helpful

Uncontrolled and double-blind research shows that vitamin B6 can be helpful for autistic children. In these trials, children typically took between 3.5 mg and almost 100 mg of B6 for every 2.2 pounds of body weight, with some researchers recommending 30 mg per 2.2 pounds of body weight. Although toxicity was not reported, such amounts are widely considered to have potential toxicity that can damage the nervous system; these

amounts should only be administered by a doctor. One prominent researcher has suggested that vitamin B6 is better supported by research than is drug treatment in dealing with autism.

Some researchers have added magnesium to vitamin B6, reporting that taking both nutrients may have better effects than taking B6 alone. The amount of magnesium—10 to 15 mg per 2.2 pounds of body weight—is high enough to cause diarrhoea in some people and should be administered by a doctor. Doctors will often try vitamin B6 or the combination of B6 and magnesium for at least three months to see whether these nutrients help autistic children.

In one double-blind trial lasting ten weeks, autistic children given 1 gram vitamin C for each 20 pounds of body weight showed a reduction in symptom severity compared with placebo.[8] The authors speculate that vitamin C may play a positive role because of its known effects on a hormone pathway typically disturbed in children with autism.

Back Pain

The low back supports most of the body's weight, and as a result, is susceptible to pain caused by injury or other problems. Over 80% of adults experience low back pain (LBP) sometime during their life. More than half will have a repeat episode.

It is often difficult to pinpoint the root of low back pain, though poor muscle tone, joint problems, and torn muscles or ligaments are common causes. A herniated or slipped disc may also cause low back pain as well as sciatica, a condition where pain travels down one or both buttocks and/or legs.

Standing or sitting for extended periods, wearing high heels, and being sedentary increase the risk of developing low back pain, as do obesity and back strain due to improper lifting. Up to half of pregnant women experience some low back pain. Long hours spent driving a car may contribute to a herniated disc. This is possibly due to the vibration caused by the car.

Many people with low back pain recover without seeing a doctor or receiving treatment. Up to 90% recuperate within three to four weeks, though recurrences are common, and chronic low back pain develops in many people. Low back pain is considered acute, or short-term, when it lasts for a few days up to many weeks. Chronic low back pain refers to any episode that lasts longer than three months.

While low back pain is rarely life threatening, it is still important to have chronic or recurring back pain assessed by a healthcare professional. Potentially serious causes include spinal tumour, infection, fracture, nerve damage, osteoporosis, arthritis, or pain caused by conditions found in internal organs such as the kidneys.

What are the symptoms of low back pain?

Low back pain may be a steady ache or a sharp, acute pain that is worse with movement.

Lifestyle changes that may be helpful

Preliminary data indicate that smoking may contribute to low back pain. One survey of over 29,000 people reported a significant association between smoking and low back pain. Smaller people (children, women, those who weigh less) are most affected. A study involving people with herniated discs found that both current and ex-smokers are at much higher risk of developing disc disease than non-smokers. Other research reveals 18% greater disc degeneration in the lower spines of smokers compared with non-smokers. Smoking is thought to cause malnutrition of spinal discs, which in turn makes them more vulnerable to mechanical stress.

One survey reported that people who drank wine healed more quickly after disc surgery in the lower back than those who abstained. However, alcohol consumption may cause cirrhosis of the liver, cancer, high blood pressure, and alcoholism. As a result, many doctors never recommend alcohol even though moderate consumption has been linked to some health benefits. For those deciding whether light drinking might help with recovery from disc surgery, it is best to consult a doctor.

Regular exercise and proper lifting techniques help prevent low back problems from developing. Proper lifting involves keeping an object close to the body and avoiding bending forwarding, reaching, and twisting while lifting. Low back pain and disc degeneration are both more likely to develop among sedentary people than those who are physically active. However, long-term participation in some competitive sports may contribute to spinal disc degeneration.

Therapeutic exercise helps people recover from low back pain and low back surgery. Less clear are details about how this should be done for greatest benefit. In other words, the best type of exercise, frequency, duration, and timing of a program still need to be determined. One study reported therapeutic exercise significantly improved chronic low back pain compared to exercise performed at home without professional guidance. Another trial discovered that women with chronic low back pain who began supervised back strengthening exercises at a fitness centre were more consistent exercisers than those who started and continued therapeutic exercises at home. Both groups experienced significant improvement in pain. However, the supervised group experienced better long-term improvement.

While heavy lifting and other strenuous labour may contribute to low back pain, one trial found that people with sedentary jobs gained more benefit from an exercise program than those who have physically hard or moderate occupations. Motivational programs may also improve exercise consistency, which in turn decreases pain and disability. People with low back pain who wish to embark on an exercise program should first consult with a physical therapist or other practitioner skilled in this area.

Supervised bed rest, for two to four days, coupled with appropriate physical therapy and therapeutic exercise, is often recommended by medical doctors for acute low back pain. However, reviews of bed rest recommendations have concluded that bed rest is, at best, ineffective and may even delay recovery. It is better to try to stay active and maintain a normal daily schedule as much as possible.

General recommendations for people recuperating from low back pain include wearing low-heeled comfortable shoes, sitting in chairs with good lower back support, using work

surfaces that are a comfortable height, resting one foot on a low stool if standing for long periods, and supporting the low back during long periods of driving.

Nutritional supplements that may be helpful

Three double-blind trials have investigated the effects of supplementing a combination of the enzymes trypsin and chymotrypsin for seven to ten days on severe low back pain with or without accompanying leg pain. Eight tablets per day were given initially in all trials, but in two trials the number of pills was reduced to four per day after two to three days. One of these trials reported small, though statistically significant improvements, for some measures in people with degenerative arthritis of the lower spine. People with sciatica-type leg pain had significant improvement in several measures in one trial, while another found the enzymes were not much more effective than a placebo. These trials included chronic low back conditions, so their relevance to acute LBP alone may be limited.

Several animal studies and some research involving humans suggest that a synthetic version of the natural amino acid phenylalanine called D-phenylalaline (DPA) reduces pain by decreasing the enzyme that breaks down endorphins. It is less clear whether DPA may help people with LBP, though there are a small number of reports to that effect, including one uncontrolled report of 27 of 37 people with LBP experiencing "good to excellent relief." In a double-blind trial, University of Texas researchers found that 250 mg of DPA four times per day for four weeks was no more effective than placebo for 30 people with various types of chronic pain; 13 of these people had low back pain. In a Japanese clinical trial, 4 grams of DPA per day was given to people with chronic low back pain half an hour before they received acupuncture. Although not statistically significant, the results were good or excellent for 18 of the 30. The most common supplemental form of phenylalanine is D, L-phenylalanine (DLPA). Doctors typically recommend 1,500–2,500 mg per day of DLPA.

A combination of vitamin B1, vitamin B6, and vitamin B12 has proved useful for preventing a relapse of a common type of back pain linked to vertebral syndromes, as well as reducing the amount of anti-inflammatory medications needed to control back pain, according to double-blind trials.[37] Typical amounts used have been 50–100 mg each of vitamins B1 and B6, and 250–500 mcg of vitamin B12, all taken three times per day. Such high amounts of vitamin B6 require supervision by a doctor.

Proteolytic enzymes, including bromelain, papain, trypsin, and chymotrypsin, may be helpful in healing minor injuries because they have anti-inflammatory activity and are capable of being absorbed from the gastrointestinal tract. Several preliminary trials have reported reduced pain and swelling, and/or faster healing in people with a variety of conditions who use either bromelain or papain.

A preliminary report in 1964 suggested that 500–1,000 mg per day of vitamin C helped many people avoid surgery for their disc-related low back pain. No controlled research has been done to examine this claim further.

Herbs that may be helpful

Colchicine, a substance derived from autumn crocus, may be helpful for chronic back pain caused by a herniated disc. A review shows that colchicine has provided relief from pain, muscle spasm, and weakness associated with disc disease including several double-blind trials. The author of these reports has suggested that 0.6 to 1.2 mg of

colchicine per day leads to dramatic improvement in four out of ten cases of disc disease. In most clinical trials, colchicine is given intravenously. However, the oral administration of this herb-based remedy also has had moderate effectiveness. People with low back pain should consult a physician skilled in herbal medicines before taking colchicine due to potentially severe side effects.

Willow bark is traditionally used for pain and conditions of inflammation. According to one controlled clinical trial, use of high amounts of willow bark extract may help people with low back pain. One trial found 240 mg of salicin from a willow extract to be more effective than 120 mg of salicin or a placebo for treating exacerbations of low back pain.

Topical cayenne pepper has been used for centuries to reduce pain, and more recently, to diminish localized pain for a number of conditions, including chronic pain, although low back pain has not been specifically investigated. Cayenne creams typically contain 0.025–0.075% capsaicin. While cayenne cream causes a burning sensation the first few times used, this decreases with each application. Pain relief is also enhanced with use as substance P, the compound that induces pain, is depleted. To avoid contamination of the mouth, nose, or eyes, hands should be thoroughly washed after use or gloves should be worn. Do not apply cayenne cream to broken skin.

One double-blind trial found that devil's claw capsules (containing 800 mg of a concentrated extract taken three times per day) were helpful in reducing acute low back pain in some people. Another double-blind trial (using 200 mg or 400 mg of devil's claw extract three times daily) achieved similar results in some people with exacerbations of chronic low back pain.

Herbalists often use ginger to decrease inflammation and the pain associated with it, including for those with low back pain. They typically suggest 1.5 to 3 ml of ginger tincture three times per day, or 2 to 4 grams of the dried root powder two to three times per day. Some products contain a combination of curcumin and ginger. However, no research has investigated the effects of these herbs on low back pain.

A combination of eucalyptus and peppermint oil applied directly to a painful area may help. Preliminary research indicates that the counter-irritant quality of these essential oils may decrease pain and increase blood flow to afflicted regions. Peppermint and eucalyptus, diluted in an oil base, are usually applied several times per day, or as needed, to control pain. Plant oils that may have similar properties are rosemary, juniper, and wintergreen.

Turmeric is another herb known traditionally for its anti-inflammatory effects, a possible advantage for people suffering from low back pain. Several preliminary studies confirm that curcumin, one active ingredient in turmeric, may decrease inflammation in both humans and animals In one double-blind trial, a formula containing turmeric, other herbs, and zinc significantly diminished pain for people with osteoarthritis. Standardized extracts containing 400 to 600 mg of curcumin per tablet or capsule are typically taken three times per day. For tinctures of turmeric, 0.5 to 1.5 ml three times per day are the usual amount.

Holistic approaches that may be helpful

Acupuncture may be helpful in the treatment of low back pain in some people. Case reports and numerous preliminary trials have described significant improvement in both

acute and chronic back pain following acupuncture (or acupuncture with electrical stimulation) treatment. In a single controlled study of acute back pain, both electro acupuncture and drug therapy (acetaminophen) led to statistically significant pain reduction and improved mobility.

Several controlled clinical trials have evaluated acupuncture for chronic low back pain. A controlled trial found acupuncture was significantly superior to placebo (fake electrical stimulation through the skin) in four of five measures of pain and physical signs. Controlled trials using electro acupuncture have reported either benefit or no benefit for chronic back pain. Double-blind trial compared acupuncture to injections of aesthetic just below the skin at non-acupuncture points, and found no difference in effect between the two treatments. Controlled trials have compared acupuncture to transcutaneous nerve stimulation (TENS). Some, though not all, demonstrated greater pain relief with acupuncture when compared to TENS, and one found improved spinal mobility only with acupuncture.

In one preliminary trial, acupuncture relieved pain and diminished disability in the low back during pregnancy better than physiotherapy.

A recent analysis and review of studies reported acupuncture was effective for low back pain, though another recent review concluded acupuncture could not be recommended due to the poor quality of the research. A third review concluded that acupuncture was beneficial for people with slipped discs and sciatica and could be recommended at the very least as a supplementary therapy. Since the vast majority of controlled acupuncture research addresses chronic low back pain, it remains unknown whether people with acute low back pain benefit significantly from acupuncture.

The federally funded Agency for Health Care Policy and Research has deemed spinal manipulation effective for acute low back pain during the first month following injury. This recommendation is supported by other research, though some has not been well controlled. People whose initial pain or disability is severe to moderate appear to benefit the most, though those with longer lasting or chronic pain may also be helped by spinal manipulation. One 12-month controlled study found no difference in benefit between manipulation and standard physical therapy. Another controlled study found a series of eight treatments with spinal manipulation was as effective as conventional medical therapy, but the manipulation group needed less pain medication and physical therapy. Practitioners who perform spinal manipulation include chiropractors, some osteopaths, and some physical therapists.

Some researchers suggest that spinal manipulation should not be performed on people with a herniated (slipped) disc, because it may lead to spinal cord injuries. However, other preliminary trials report that spinal manipulation helps those with herniated discs, as did one controlled study comparing manipulation to standard physical therapy. In one investigation of 59 people with slipped discs who received chiropractic treatment, including manipulation, 90% reported improvement. Those with a history of low back surgery had poor outcomes. People with LBP due to herniated discs who wish to try this method should first consult with a chiropractor or other physician skilled in spinal manipulation. A recent controlled study compared manipulation, acupuncture, and medication for chronic spinal pain. Only manipulation significantly improved pain and disability score.

There is inconclusive evidence that massage alone helps people with low back pain, though preliminary research indicates it has potential. Many practitioners use massage in combination with other physical therapies, such as spinal manipulation or therapeutic exercise. People with low back pain who want to try massage should consult with a qualified massage therapist.

Some controlled trials indicate that biofeedback benefits people with chronic low back pain, but other trials do not. One study found that biofeedback was more effective than behavioural therapy or conservative medical treatment for people with chronic back pain. The study also found biofeedback to be the only method where people experienced significant reduction in pain for up to the two years of follow-up. People wishing to try biofeedback should discuss this method with a qualified practitioner.

Emotional distress has been associated with aggravating low back pain, including that caused by a herniated disc The effects on back pain of counselling aimed at reducing emotional stress remain unknown, though it is used in some clinics employing multidisciplinary approaches to treating chronic lower back pain

Bacterial Infection

Infection is the result of invasion of the body by micro organisms, including bacteria, viruses, or fungi.
Not all micro organisms cause infections in the body, and exposure to a disease-causing micro organism does not always result in symptoms. The immune system plays a large role in determining the body's ability to fight off infection.

Some examples of infection are common cold/sore throat, influenza, cough, recurrent ear infections, urinary tract infection, yeast infection, athlete's foot, cold sores, HIV, shingles, and parasites.

What are the symptoms of infection?

Symptoms of infection include localized warmth, redness, swelling, discharge, foul-smelling odour, and pain to the touch. In more serious cases, symptoms may also include fever, chills, nausea, vomiting, diarrhoea, and fatigue.

Dietary changes that may be helpful

Nutrition is a major contributor to the functioning of the immune system, which in turn influences whether or not the body is resistant to infection. Specifically, it makes sense to restrict sugar, because sugar interferes with the ability of white blood cells to destroy bacteria. Alcohol also interferes with a wide variety of immune defences, and excessive dietary fat reduces natural killer cell activity. However, there is no research investigating whether reducing sugar, alcohol, or fat intake decreases the risk of infection or improves healing.
Allergy, including food allergy, has been suggested to predispose people to recurrent infection, and many doctors consider allergy treatment for people with recurrent infections. The links between allergy and ear infections, urinary tract infections in children, and yeast vaginitis in women have been documented.

Lifestyle changes that may be helpful

Stress can depress the immune system, thus increasing the body's susceptibility to infection. Coping effectively with stress is important. Exercise increases natural killer cell activity, which may also help prevent infections.

Nutritional supplements that may be helpful

Nutrients useful for maintaining healthy immune function are also applicable for preventing infections. Vitamin A plays an important role in immune system function and helps mucous membranes, including those in the lungs, resist invasion by micro organisms. However, most research shows that while vitamin A supplementation helps people prevent or treat infections in developing countries where deficiencies are common, little to no positive effect, and even slight adverse effects, have resulted from giving vitamin A supplements to people in countries where most people consume adequate amounts of vitamin A. Moreover, vitamin A supplementation during infections appears beneficial only in certain diseases. An analysis of trials revealed that vitamin A reduces mortality from measles and diarrhoea, but not from pneumonia, in children living in developing countries. A double-blind trial for vitamin A supplementation in Tanzanian children with pneumonia confirmed its lack of effectiveness for this condition. In general, parents in the developed world should not give vitamin A supplements to children unless there is a reason to believe vitamin A deficiency is likely, such as the presence of a condition causing malabsorption (e.g., celiac disease). However, the American Academy of Paediatrics recommends that all children with measles should be given high-dose vitamin A for several days.

Vitamin C has antiviral activity, and may help prevent viral infections or, in the case of the common cold, reduce the severity and duration of an infection. Most studies on the common cold used 1 to 4 grams of vitamin C per day.

Lactobacillus acidophilus (the friendly bacteria found in yogurt) produces acids that kill invading bacteria. The effective amount of acidophilus depends on the strain used, as well as the concentration of viable organisms. These and other friendly bacteria known as probiotics inhibit the growth of potentially infectious organisms (pathogens) by producing acids, hydrogen peroxide, and natural antibiotics called bacteriocins and microcins, by utilizing nutrients needed by pathogens, by occupying attachment sites on the gut wall that would otherwise be available to pathogens, and by stimulating immune attacks on pathogens. Infections that have been successfully prevented or treated with friendly bacteria include infectious diarrhoea, vaginitis, and urinary tract infections.

Marginal deficiencies of zinc result in impairments of immune function. Supplementation with 50 mg of zinc three times per day for 30 days has been shown to increase immune function in healthy people. However, such large amounts of zinc can potentially cause adverse effects. Some doctors recommend lower amounts of supplemental zinc for people experiencing recurrent infections, such as 25 mg per day for adults and even lower amounts for children (depending on body weight). Zinc lozenges have been found helpful in some studies for the common cold. Zinc has not been studied as prevention or treatment for other types of infection.

A multiple vitamin-mineral formula helped elderly people avoid infections in one double-blind trial, but not in another. In a double-blind study of middle-aged and elderly diabetics, supplementation with a multiple vitamin and mineral preparation for one year reduced the risk of infection by more than 80%, compared with a placebo. In another

double-blind trial, supplements of 100 mcg per day of selenium and 20 mg per day of zinc, with or without additional vitamin C, vitamin E, and beta-carotene, reduced infections in elderly people, though vitamins without minerals had no effect. That study suggests that trace minerals may be the most important components of a multiple vitamin and mineral formula for preventing infections.

Premature infants with very low birth weight have an increased susceptibility to infections. In a double-blind trial, premature infants were given either selenium supplements (5–7 mcg per 2.2 pounds of body weight) or placebo. Those receiving the selenium supplements had fewer hospital-acquired infections.

Athletes who undergo intensive training or participate in endurance races (such as a marathon) are at increased risk of developing infections. In a double-blind study, marathon runners received either glutamine (5 grams immediately after the race and 5 grams again two hours later) or a placebo. Compared with the placebo, supplementation with L-glutamine reduced the incidence of infections over the next seven days by 62%.

Herbs that may be helpful

The main herbs for infection can be broken down into three basic categories: those that support a person's immune system in the fight against microbes, those that directly attack microbes, and those that do both. These categories are summarized in the table below. Note that this table does not include herbs that are largely used for parasitic infections of the intestines.

Bad Breath

Halitosis is the technical term for bad breath, a condition estimated to affect 50 to 65% of the population.

Up to 90% of cases are thought to originate from sources in the mouth, including poor oral hygiene, periodontal disease, coating on the tongue, impacted food, faulty dental restorations, and throat infections. The remaining 10% are due to systemic disorders, such as peptic ulcer (when associated with infection), lung infections (bad breath can be the first sign in some cases), liver or kidney disease, diabetes mellitus, cancer,[10] or even a person's imagination (healthy individuals sometimes complain of bad breath that cannot be smelled by anyone else and is not linked to any clinical disorder).

In most cases, bad breath in the mouth can be traced to sulphur gases produced by bacteria in the mouth. Factors that support the growth of these bacteria will predispose a person to halitosis. Examples include accumulation of food within pockets around the teeth, among the bumps at the back of the tongue, or in small pockets in the tonsils; sloughed cells from the mouth; and diminished saliva flow. Mucus in the throat or sinuses can also serve as a breeding ground for bacteria. Conditions are most favourable for odour production during the night and between meals.

Although bad breath primarily represents a source of embarrassment or annoyance, research has shown that the sulphur gases most responsible for halitosis (hydrogen sulphide and methyl mercaptan) are also potentially damaging to the tissues in the mouth, and can lead to periodontitis (inflammation of the gums and ligaments supporting the teeth). As periodontal disease progresses, so may the halitosis, as bacteria accumulate in the pockets that form next to the teeth.

Lifestyle changes that may be helpful

Home oral hygiene is probably the most effective way to reduce accumulations of debris and bacteria that lead to halitosis. This includes regular tooth brushing and flossing, and/or the use of mechanical irrigators to remove accumulations of food after eating. Brushing the tongue or using a commercial tongue scraper, especially over the bumpiest region of the tongue, may help remove the odour-causing agents as well as lower the overall bacteria count in the mouth.

Because of the role of gum disease in halitosis, regular dental care is recommended to prevent or treat gum disease. Treatment for a person with periodontal pockets might include scaling of the teeth to remove tartar.

A reduced saliva flow increases the concentration of bacteria in the mouth and worsens bad breath. One of the most common causes of dry mouth is medication, such as antihistamines, some antidepressants, and diuretics; however, chronic mouth breathing, radiation therapy, dehydration, and various diseases can also contribute. Measures that help increase saliva production (e.g., chewing sugarless gum and drinking adequate water) may improve halitosis associated with poor saliva flow. Avoiding alcohol (ironically found in many commercial mouthwashes) may also help, because alcohol is drying to the mouth.

Access by oral bacteria to sulphur-containing amino acids will enhance the production of sulphur gases that are responsible for bad breath. This effect was demonstrated in a study in which concentrations of these sulphur gases in the mouth were increased after subjects used a mouth rinse containing the amino acid cysteine. Cleaning the mouth after eating sulphur-rich foods, such as dairy, fish, and meat, may help remove the food sources for these bacteria.

Nutritional supplements that may be helpful

Because most halitosis stems from bacterial production of odiferous compounds, general measures to diminish bacteria as well as measures targeted at prevention or treatment of periodontitis and gingivitis may be helpful. Mouthwashes or toothpastes containing a compound called stabilized chlorine dioxide appear to help eliminate bad breath by directly breaking down sulphur compounds in the mouth. One study showed reductions in mouth odour for at least four hours following the use of a mouth rinse containing this substance.

Preliminary research has also demonstrated the ability of zinc to reduce the concentration of volatile sulphur compounds in the mouth. One study found that the addition of zinc to a baking soda toothpaste lessened halitosis by lowering the levels of these compounds. A mouth rinse containing zinc chloride was seen in another study to neutralize the damaging effect of methyl mercaptan on periodontal tissue in the mouth.

Nutritional supplements recommended by some doctors for prevention and treatment of periodontitis include vitamin C (people with periodontitis are often found to be deficient), vitamin E, selenium, zinc, coenzyme Q10, and folic acid. Folic acid has also been shown to reduce the severity of gingivitis when taken as a mouthwash.

Herbs that may be helpful

The potent effects of some commercial mouthwashes may be due to the inclusion of thymol (from thyme) and eukalyptol (from eucalyptus)—volatile oils that have proven activity against bacteria. One report showed bacterial counts plummet in as little as 30 seconds following a mouth rinse with the commercial mouthwash Listerine™, which contains thymol and eukalyptol. Thymol alone has been shown in research to inhibit the growth of bacteria found in the mouth. Because of their antibacterial properties, other volatile oils made from tea tree, clove, caraway, peppermint, and sage, as well as the herbs myrrh and bloodroot, might be considered in a mouthwash or toothpaste. Due to potential allergic reactions and potential side effects if some of these oils are swallowed, it is best to consult with a qualified healthcare professional before pursuing self-treatment with volatile oils that are not in approved over-the-counter products for halitosis.

Bloating

"Indigestion" refers to any number of gastrointestinal complaints, which can include gas (belching, flatulence, or bloating) and upset stomach. "Heartburn" refers to a burning feeling that can be caused by stomach acid regurgitating into the oesophagus from the stomach, by gastritis (inflammation of the lining of the stomach), or by an ulcer of the stomach or duodenum (also called peptic ulcer). "Low stomach acidity" refers to the inability to produce adequate quantities of stomach acid that will affect digestion and absorption of nutrients.

In some cases, such as lactose intolerance, symptoms of indigestion are due to a specific cause that requires specific treatment. Sometimes symptoms associated with indigestion are caused by diseases unrelated to the gastrointestinal tract. For example, ovarian cancer may cause a sensation of bloating. Anyone with symptoms of indigestion should be properly diagnosed by a healthcare professional before assuming that the information below is applicable to their situation.
The most common cause of heartburn is gastroesophageal reflux disease (GERD), in which the sphincter between the oesophagus and the stomach is not functioning properly. Another, related cause of heartburn is hiatal hernia, in which a small portion of the stomach protrudes through the aforementioned sphincter.

According to Jonathan Wright, MD, another cause of heartburn can be too little stomach acid. This may seem to be a paradox, but based on the clinical experience of a few doctors such as Dr. Wright, supplementing with betaine HCl (a compound that contains hydrochloric acid) often relieves the symptoms of heartburn and improves digestion, at least in people who have hypochlorhydria (low stomach acid). The amount of betaine HCl used varies with the size of the meal and with the amount of protein ingested. Typical amounts recommended by doctors' range from 600 to 2,400 mg per meal. Use of betaine HCl should be monitored by a healthcare practitioner and should be considered only for indigestion sufferers who have been diagnosed with hypochlorhydria.

Medical researchers since the 1930s have been concerned about the consequences of hypochlorhydria. While all the health consequences are still not entirely clear, some have been well documented.

Many minerals and vitamins appear to require adequate concentrations of stomach acid to be absorbed optimally—examples are iron, zinc, and B-complex vitamins, including

folic acid. People with achlorhydria (no stomach acid) or hypochlorhydria may therefore be at risk of developing various nutritional deficiencies, which could presumably contribute to the development of a wide range of health problems.

One of the major functions of stomach acid is to initiate the digestion of large protein molecules. If this digestive function is not performed efficiently, incompletely digested protein fragments may be absorbed into the bloodstream. The absorption of these large molecules may contribute to the development of food allergies and immunological disorders.

In addition, stomach acid normally provides a barrier against bacteria, fungi, and other organisms that are present in food and water. People with inadequate stomach acidity may therefore be at risk of having "unfriendly" micro organisms colonize their intestinal tract. Some of these organisms produce toxic substances that can be absorbed by the body.

Some researchers have found that people with certain diseases are more likely to have an inability to produce normal quantities of stomach acid. However, this does not mean these diseases are caused by too little stomach acid. Jonathan Wright, MD, usually tests patients' stomach acid if they suffer from food allergies, arthritis (both rheumatoid arthritis and osteoarthritis), pernicious anaemia (too little vitamin B12), asthma, diabetes, vitiligo, eczema, tic douloureux, Addison's disease, celiac disease, lupus erythematosus, or thyroid disease.

What are the symptoms of indigestion?

The symptoms of indigestion or upset stomach may include painful or burning sensations in the upper abdomen, bloating, belching, diffuse abdominal pain, heartburn, passing gas, nausea, and occasionally vomiting. The appearance of these symptoms is often associated with eating.

Dietary changes that may be helpful

Doctors have observed that heartburn and indigestion may be relieved in some people by avoiding or reducing the intake of caffeine and alcohol. In addition, some people with symptoms of indigestion appear to have food allergies or intolerances. Avoiding such foods may improve digestive complaints in those people. While most doctors believe there is an important connection between diet and intestinal symptoms, there are few published data documenting such associations. Dietary modifications should be undertaken with the help of a healthcare practitioner.

People who eat too fast or fail to chew their food adequately may also experience symptoms of indigestion or heartburn.

Nutritional supplements that may be helpful

Lipase, a pancreatic enzyme, aids in the digestion of fats and may improve digestion in some people. In a double-blind trial, a timed-release form of pancreatic enzymes was shown to significantly reduce gas, bloating, and fullness after a high-fat meal. Participants in this study took one capsule immediately before the meal and two capsules immediately after the meal. The three capsules together provided 30,000 USP units of lipase, 112,500 USP units of protease, and 99,600 USP units of amylase. However, the amount of pancreatic enzymes needed may vary from person to person, and should be determined with the help of a doctor.

Vitamin B12 supplementation may be beneficial for a subset of people suffering from indigestion: those with delayed emptying of the stomach contents in association with Helicobacter pylori infection and low blood levels of vitamin B12. In a double-blind study of people who satisfied those criteria, treatment with vitamin B12 significantly reduced symptoms of dyspepsia and improved stomach-emptying times.

Herbs that may be helpful

Three major categories of herbs are used to treat indigestion when no cause for the condition is known: bitters (digestive stimulants), carminatives (gas-relieving herbs), and demulcents (soothing herbs). The effects of these different categories on heartburn and low stomach acid will be discussed individually. Although there is overlap in the conditions, the categories are helpful.

Bitter herbs are thought to stimulate digestive function by increasing saliva production and promoting both stomach acid and digestive enzyme production. As a result, they are particularly used when there is low stomach acid but not in heartburn (where too much stomach acid could initially exacerbate the situation). These herbs literally taste bitter. Some examples of bitter herbs include greater celandine, wormwood, and gentian. Bitters are generally taken either by mixing 1–3 ml tincture into water and sipping slowly 10–30 minutes before eating, or by making tea, which is also sipped slowly before eating.

A double-blind study found that a standardized extract of greater celandine could relieve symptoms of indigestion (such as abdominal cramping, sensation of fullness, and nausea) significantly better than placebo. The study employed an extract standardized to 4 mg of chelidonine per capsule and gave 1–2 tablets three times daily for six weeks. However, recent reports of hepatitis following intake of greater celandine have raised concerns about its safety for treating indigestion.

Very little published research is available on the traditional uses of bitter orange as a digestive aid and sedative. The German Commission E has approved the use of bitter orange for loss of appetite and dyspeptic ailments. One test tube study showed bitter orange to potently inhibit rotavirus (a cause of diarrhoea in infants and young children). Bitter orange, in an herbal combination formula, reportedly normalized stool function and completely eased intestinal pain in 24 people with non-specific colitis and, again in an herbal combination formula, normalized stool function in another 32 people with constipation.

Artichoke, in addition to being an edible plant, is a mild bitter. Extracts of artichoke have been repeatedly shown in double-blind research to be beneficial for people with indigestion. Artichoke is particularly useful when the problem is lack of bile production by the liver. Extracts providing 500–1,000 mg per day of cynarin, the main active constituent of artichoke, are recommended by doctors.

Wormwood is sometimes used in combination with carminative herbs for people with indigestion. One double-blind trial found that a combination with peppermint, caraway, and fennel was useful in reducing gas and cramping in people with indigestion. Other bitters are gentian, dandelion, blessed thistle, yarrow, devil's claw, bitter orange, bitter melon, juniper, andrographis, prickly ash, and centaury. The amounts used are the same as the general recommendations for bitters when they are employed for the treatment of indigestion.

Some bitters widely used in traditional medicine in North America include yarrow, yellow dock, goldenseal, Oregon grape, and vervain. Oregon grape's European cousin barberry has also traditionally been used as a bitter. Animal studies indicate that yarrow, barberry, and Oregon grape, in addition to stimulating digestion like other bitters, may relieve spasms in the intestinal tract.

Boldo has been used in South America for a variety of digestive conditions, although this may have stemmed from its impact on intestinal infections or liver function. Studies specifically showing a benefit from taking boldo in people with indigestion and heartburn have not been performed. Picrorhiza, from India, has a similar story to that of boldo. While it is clearly a bitter digestive stimulant, human studies to confirm this have not yet been completed.

Horehound contains a number of constituents, including alkaloids, flavonoids, diterpenes (e.g., marrubiin), and trace amounts of volatile oils. The major active constituent marrubiin and possibly its precursor, premarrubiin, are herbal bitters that increase the flow of saliva and gastric juice, thereby stimulating the appetite. Similar to horehound, elecampane has been used by herbalists to treat people with indigestion.

Carminatives (also called aromatic digestive tonics or aromatic bitters) may be used to relieve symptoms of indigestion, particularly when there is excessive gas. It is believed that carminative agents work, at least in part, by relieving spasms in the intestinal tract.

Among the most notable and well-studied carminatives are peppermint, fennel, and caraway. Double-blind trials have shown that combinations of peppermint and caraway oil and a combination of peppermint, fennel, caraway, and wormwood have been found to reduce gas and cramping in people with indigestion. Generally, 3–5 drops of natural essential oils or 3–5 ml of tincture of any of these herbs, taken in water two to three times per day before meals, can be helpful. Alternately, a tea can be made by grinding 2–3 teaspoons of the seeds of fennel or caraway or the leaves of peppermint, and then simmering them in a cup of water (covered) for ten minutes. Drink three or more cups per day just after meals.

Linden also has a long tradition of use for indigestion. Older clinical trials have shown that linden flower tea can help people who suffer from upset stomach or from excessive gas that causes the stomach to push up and put pressure on the heart (also known as the gastro cardiac syndrome.) The reputed antispasmodic action of linden, particularly in the intestines, has been confirmed in at least one human trial.[33] Linden tea is prepared by steeping 2–3 tsp of flowers in a cup of hot water for 15 minutes. Several cups per day are recommended.

In a double-blind trial, the spice turmeric was found to relieve indigestion. Two capsules containing 250 mg turmeric powder per capsule were given four times per day.

Chamomile (German chamomile or Matricaria recutita) is effective in relieving inflamed or irritated mucous membranes of the digestive tract. Since heartburn sometimes involves reflux of stomach acid into the oesophagus, the anti-inflammatory properties of chamomile may also be useful. In addition, chamomile promotes normal digestion. However, modern studies to prove chamomile beneficial for people with heartburn or

indigestion are lacking. Roman chamomile (Anthemis nobilis) has not been studied for indigestion though it has traditionally been used similarly to German chamomile.

Typically taken in tea form, chamomile is recommended three to four times per day between meals. Chamomile tea is prepared by pouring boiling water over dried flowers, and steeping for several minutes. Alternatively, 3–5 ml of chamomile tincture may be added to hot water or 2–3 grams of chamomile in capsule or tablet form may be taken three to four times per day between meals.

Lemon balm is another carminative herb used traditionally for indigestion. Lemon balm, usually taken as tea, is prepared by steeping 2–3 teaspoons of leaves in hot water for 10 to 15 minutes in a covered container. Three or more cups per day are consumed immediately after meals. Three to five millilitres of tincture can also be used three times per day.

There are numerous other carminative herbs, including European angelica root (Angelica archangelica), anise, Basil, cardamom, cinnamon, cloves, coriander, dill, ginger, oregano, rosemary, sage, lavender, and thyme. Many of these are common kitchen herbs and thus are readily available for making tea to calm an upset stomach. Rosemary is sometimes used to treat indigestion in the elderly by European herbal practitioners. The German Commission E monograph suggests a daily intake of 4–6 grams of sage leaf. Pennyroyal is no longer recommended for use in people with indigestion, however, due to potential side effects.

Demulcents are the third category of herbs used to treat indigestion and heartburn. These herbs seem to work by decreasing inflammation and forming a physical barrier against stomach acid or other abdominal irritants. Examples of demulcent herbs include ginger, liquorice, and slippery elm.

Ginger is a spice well known for its traditional use as a treatment for a variety of gastrointestinal complaints, ranging from flatulence to ulcers. Ginger has anti-inflammatory and anti-nausea properties. Ginger has been shown to enhance normal, spontaneous movements of the intestines that aid digestion.

Liquorice protects the mucous membranes lining the digestive tract by increasing the production of mucin, a compound that protects against the adverse effects of stomach acid and various harmful substances. The extract of liquorice root that is most often used by people with indigestion is known as deglycyrrhizinated liquorice (DGL). Glycyrrhizin, which occurs naturally in liquorice root, has cortisone-like effects and can cause high blood pressure, water retention, and other problems in some people. When the glycyrrhizin is removed to form DGL, the liquorice root retains its beneficial effects against indigestion, while the risk of side effects is greatly reduced. The usual suggested amount of DGL is one or two chewable tablets (250–500 mg per tablet), chewed and swallowed 15 minutes before meals and one to two hours before bedtime. Although many research trials show that DGL is helpful for people with peptic ulcers, the use of DGL for heartburn and indigestion is based primarily on anecdotal information.

The mucilage content in slippery elm appears to act as a barrier against the damaging effects of acid on the oesophagus in people with heartburn. It may also have an anti-inflammatory effect locally in the stomach and intestines. Two or more tablets or capsules (typically 400–500 mg each) may be taken three to four times per day.

Alternatively, a tea is made by boiling 1/2–2 grams of the bark in 200 ml of water for 10 to 15 minutes, which is then cooled before drinking; three to four cups a day can be used. Tincture (5 ml three times per day) may also be taken but is believed to be less helpful. Marshmallow and bladderwrack may be used the same way as slippery elm.

Rooibos is traditionally used as a tea as a digestive aid. Unfortunately, no clinical trials have yet been published on this herb, so its efficacy is still unknown. Typically 1 to 4 teaspoons (5 to 20 mg) of rooibos is simmered in one cup of water (236 ml) for up to 10 minutes. Three cups of this tea can be drunk per day. Three cups of this tea can be drunk per day.

People in the south-western United States and northern Mexico have long used chaparral tea to help calm upset stomachs. It is unclear into which of the above categories—if any—chaparral fits. This strong tasting tea was used only in small amounts. Modern research has not confirmed the usefulness of chaparral for indigestion, and there are serious concerns about the safety of improper internal use of this herb. Before taking chaparral, consult with a knowledgeable healthcare professional.

Blood Pressure

Approximately 90% of people with high blood pressure have “essential” or “idiopathic” hypertension, for which the cause is poorly understood. The terms “hypertension” and “high blood pressure” as used here refer only to this most common form and not to pregnancy-induced hypertension or hypertension clearly linked to a known cause, such as Cushing’s syndrome, pheochromocytoma, or kidney disease. Hypertension must always be evaluated by a healthcare professional. Extremely high blood pressure (malignant hypertension) or rapidly worsening hypertension (accelerated hypertension) almost always requires treatment with conventional medicine. People with mild to moderate high blood pressure should work with a doctor before attempting to use the information contained here, as blood pressure requires monitoring and in some cases the use of blood pressure-lowering drugs.

As with conventional drugs, the use of natural substances sometimes controls blood pressure if taken consistently but does not lead to a cure for high blood pressure. Thus, someone whose blood pressure is successfully reduced by weight loss, avoidance of salt, and increased intake of fruits and vegetables would need to maintain these changes permanently in order to retain control of blood pressure. Left untreated, hypertension significantly increases the risk of stroke and heart disease.

What are the symptoms of hypertension?

Essential hypertension is usually without symptoms until complications develop. The symptoms of complications depend on the organs involved.

Dietary changes that may be helpful

Primitive societies exposed to very little salt suffer from little or no hypertension. Salt (sodium chloride) intake has also been definitively linked to hypertension in western societies. Reducing salt intake in the diet lowers blood pressure in most people. The more salt is restricted, the greater the blood pressure-lowering effect. Individual studies sometimes come to differing conclusions about the relationship between salt intake and blood pressure, in part because blood pressure-lowering effects of salt restriction vary

from person to person, and small to moderate reductions in salt intake often have minimal effects on blood pressure—particularly in young people and in those who do not have hypertension. Nonetheless, dramatic reductions in salt intake are generally effective for many people with hypertension.

With the prevalence of salted processed and restaurant food, simply avoiding the salt shaker no longer leads to large decreases in salt intake for most people. Totally eliminating salt is more effective, but is quite difficult to achieve. Moreover, while an overview of the research found "There is no evidence that sodium reduction presents any safety hazards, reports of short-term paradoxical increases in blood pressure in response to salt restriction have occasionally appeared.[6] Therefore, people wishing to use salt reduction to lower their blood pressure should consult with a doctor.

Vegetarians have lower blood pressure than do people who eat meat. This occurs partly because fruits and vegetables contain potassium—a known blood pressure-lowering mineral. The best way to supplement potassium is with fruit, which contains more of the mineral than do potassium supplements. However, fruit contains so much potassium that people taking "potassium-sparing" diuretics can consume too much potassium simply by eating several pieces of fruit per day. Therefore, people taking potassium-sparing diuretics should consult the prescribing doctor before increasing fruit intake. In the Dietary Approaches to Stop Hypertension (DASH) trial, increasing intake of fruits and vegetables (and therefore fibre) and reducing cholesterol and dairy fat led to large reductions in blood pressure (in medical terms, 11.4 systolic and 5.5 diastolic) in just eight weeks. Even though it did not employ a vegetarian diet itself, the outcome of the DASH trial supports the usefulness of vegetarian diets because diets employed by DASH researchers were related to what many vegetarians eat. The DASH trial also showed that blood pressure can be significantly reduced in hypertensive people (most dramatically in African Americans) with diet alone, without weight loss or even restriction of salt. Nonetheless, restricting salt while consuming the DASH diet has lowered blood pressure even more effectively than the use of the DASH diet alone.

Sugar has been reported to increase blood pressure in animals and humans in short-term trials. Though the real importance of this experimental effect remains unclear, some doctors recommend that people with high blood pressure cut back on their intake of sugar.

Right after consuming caffeine from coffee or tea, blood pressure increases briefly. In trials lasting almost two months on average, coffee drinking has led to small increases in blood pressure. The effects of long-term avoidance of caffeine (from coffee, tea, chocolate, cola drinks, and some medications) on blood pressure remain unclear. A few reports have even claimed that long-term coffee drinkers tend to have lower blood pressure than those who avoid coffee. Despite the lack of clarity in published research, many doctors tell people with high blood pressure to avoid consumption of caffeine.

Several double-blind trials have shown that adding 6.5–7 grams of fibre per day to the diet for several months leads to reductions in blood pressure. However, other trials have not found fibre helpful in reducing blood pressure. The reasons for these discrepant findings are not clear.

Food allergy was reported to contribute to high blood pressure in a study of people who had migraine headaches. In that report, all 15 people who also had high blood pressure

experienced a significant drop in blood pressure when put on a hypoallergenic diet. People who suffer migraine headaches and have hypertension should discuss the issue of allergy diagnosis and elimination with a doctor.

Exposure to lead and other heavy metals has been linked to high blood pressure in some, but not all, research. If other approaches to high blood pressure prove unsuccessful, it makes sense for people with hypertension to have their body's burden of lead evaluated by a healthcare professional.

Lifestyle changes that may be helpful

Smoking is particularly injurious for people with hypertension. The combination of hypertension and smoking greatly increases the risk of heart disease-related sickness and death. All people with high blood pressure need to quit smoking.

Consumption of more than about three alcoholic beverages per day appears to increase blood pressure. Whether one or two drinks per day meaningfully increases blood pressure remains unclear.

Daily exercise can lower blood pressure significantly. A 12-week program of Chinese T'ai Chi was reported to be almost as effective as aerobic exercise in lowering blood pressure. Progressive resistance exercise (e.g., weight lifting) also appears to help reduce blood pressure. At the same time, blood pressure has been known to increase significantly during the act of lifting heavy weights; for this reason, people with sharply elevated blood pressure, especially those with cardiovascular disease, should approach heavy strenuous resistance exercise with caution. In general, people over 40 years of age should consult with their doctors before starting any exercise regimen.

Most people with high blood pressure are overweight. Weight loss lowers blood pressure significantly in those who are both overweight and hypertensive. In fact, reducing body weight by as little as ten pounds can lead to a significant reduction in blood pressure. Weight loss appears to have a stronger blood pressure-lowering effect than dietary salt restriction.

Nutritional supplements that may be helpful

Both preliminary and double-blind trials have reported that supplementation with Coenzyme Q10 (CoQ10) leads to a significant decrease in blood pressure in people with hypertension. Much of this research has used 100 mg of CoQ10 per day for at least ten weeks.

EPA and DHA, the omega-3 fatty acids found in fish oil, lower blood pressure, according to an analysis of 31 trials. The effect was dependent on the amount of omega-3 oil used, with the best results occurring in trials using unsustainably high levels: 15 grams per day—the amount often found in 50 grams of fish oil. Although results with lower intakes were not as impressive, trials using over 3 grams per day of omega-3 (as typically found in ten 1,000 mg pills of fish oil) also reported significant reductions in blood pressure. One double-blind trial reported that DHA had greater effects on blood pressure than EPA or mixed fish oil supplements. DHA is now available as a supplement separate from EPA.

Potassium supplements in the amount of at least 2,400 mg per day lower blood pressure, according to an analysis of 33 trials. However, potassium supplements greater

than 100 mg per tablet require a prescription, and the low-dose potassium supplements available without a prescription can irritate the stomach if taken in large amounts. Moreover, some people, such as those taking potassium-sparing diuretics, should not take potassium supplements. Therefore, the use of potassium supplements for lowering blood pressure should only be done under the care of a doctor.

Some, but not all, trials show that magnesium supplements—typically 350–500 mg per day—lower blood pressure. Magnesium appears to be particularly effective in people who are taking potassium-depleting diuretics. Potassium-depleting diuretics also deplete magnesium. Therefore, the drop in blood pressure resulting from magnesium supplementation in people taking these drugs may result from overcoming a mild magnesium deficiency.

Calcium supplementation—typically 800–1,500 mg per day—may lower blood pressure. However, while an analysis of 42 trials reported that calcium supplementation led to an average drop in blood pressure that was statistically significant, the actual decrease was small (in medical terms, a drop of 1.4 systolic over 0.8 diastolic pressure). Results might have been improved had the analysis been limited to studies of people with hypertension, since calcium has almost no effect on the blood pressure of healthy people. In the analysis of 42 trials, effects were seen both with dietary calcium and with use of calcium supplements. A 12-week trial of 1,000 mg per day of calcium accompanied by blood pressure monitoring is a reasonable way to assess efficacy in a given person.

Five double-blind trials have found that vitamin C supplementation reduces blood pressure, but the reduction was statistically significant in only three of the five, and in most cases reductions were modest. Some doctors recommend that people with elevated blood pressure supplement with 1,000 mg vitamin C per day.

In a double-blind study of people with high blood pressure, 200 IU of vitamin E per day taken for 27 weeks was significantly more effective than a placebo at reducing both systolic and diastolic blood pressure. This study was done in Iran, and it is not clear whether the results would apply to individuals consuming a Western diet.

A deficiency of the amino acid taurine is thought by some researchers to play an important role in elevating blood pressure in people with hypertension. Limited research has found that supplementation with taurine lowers blood pressure in animals and in people (at 6 grams per day), possibly by reducing levels of the hormone epinephrine (adrenaline).

The amino acid Arginine is needed by the body to make nitric oxide, a substance that allows blood vessels to dilate, thus leading to reduced blood pressure. Intravenous administration of Arginine has reduced blood pressure in humans in some reports. In one controlled trial, people not responding to conventional medication for their hypertension were found to respond to a combination of conventional medication and oral Arginine (2 grams taken three times per day.)

Herbs that may be helpful

In a double-blind trial, people with mild hypertension took a tincture of Achillea wilhelmsii, an herb used in traditional Persian medicine. Participants in the trial used 15–20 drops of the tincture twice daily for six months. At the end of the trial, participants experienced

significant reductions in both systolic and diastolic blood pressure compared to those who took placebo. No adverse effects were reported.

Garlic has a mild blood pressure-lowering effect, according to an analysis of ten double-blind trials. All of these trials administered garlic for at least four weeks, typically using 600–900 mg of garlic extract per day. Onion—closely related to garlic—may also have a mild blood pressure-lowering effect, according to preliminary research.

European mistletoe (Viscum album) has reduced headaches and dizziness associated with high blood pressure, according to preliminary research. Mistletoe may be taken as 0.5 ml tincture three times per day. The blood pressure-lowering effect of mistletoe is small and may take weeks to become evident. Due to possible serious side effects, European mistletoe should only be taken under the careful supervision of a physician trained in its use.

Indian snakeroot (Rauwolfia serpentina) contains powerful alkaloids, including reserpine, that affect blood pressure and heart function. Indian snakeroot has been used traditionally to treat hypertension, especially when associated with stress and anxiety. Due to possible serious side effects, Indian snakeroot should only be taken under the careful supervision of a physician trained in its use.

In animal studies oleuropein, one of the constituents of olive leaf, has decreased blood pressure and dilated arteries surrounding the heart, when given by injection or intravenously. Olive leaf has been used traditionally to treat people with hypertension, but controlled human trials are needed before a blood pressure-lowering effect can be established.

A double-blind trial reported that reishi mushrooms significantly lowered blood pressure in humans. The trial used a concentrated extract of reishi (25:1) in the amount of 55 mg three times per day for four weeks. It is unclear from the clinical report how long it takes for the blood pressure-lowering effects of reishi to be measured.

Hawthorn leaf and flower extracts have been reported to have a mild blood pressure-lowering effect in people with early stage congestive heart failure. This effect has not been studied in hypertensive people with normal heart functioning.

Human trials investigating the use of Coleus forskohlii in blood pressure reduction have yet to be conducted. However, forskolin, the active ingredient in Coleus forskohlii, has lowered blood pressure in a small, preliminary trial with people suffering from cardiomyopathy. Extracts of coleus standardized to contain 15–20% forskolin are available, but further trials are needed to determine effective levels for treating people with hypertension.

Most herbal reference books suggest that ginseng should not be used by people with hypertension. However, the results of a preliminary trial suggest that red ginseng root (Panax ginseng radix rubra) has either no effect on, or may actually slightly lower, blood pressure in hypertensive people. However, many herbalists continue to believe that people with hypertension should avoid Asian ginseng and American ginseng, and, while not a true ginseng, Siberian ginseng (eleuthero) as well.
In a controlled trial, people with hypertension received either Hibiscus tea (Hibiscus sabdariffa) or ordinary tea daily. Two tablespoons of dried herb were boiled in one cup of

water for 20 to 30 minutes and consumed daily for 12 days. By the final day, blood pressure was 11% lower in the treatment group, compared to only 4% in the control group.

Holistic approaches that may be helpful

Anxiety in men (but not women) has been linked to development of hypertension. Several research groups have also shown a relationship between job strain and high blood pressure in men. Some researchers have tied blood pressure specifically to suppressed aggression.

Although some kind of relationship between stress and high blood pressure appears to exist, the effects of treatment for stress remain controversial. An analysis of 26 trials reported that reductions in blood pressure caused by biofeedback or meditation were no greater than those seen with placebo. Though some stress management interventions have not been helpful in reducing blood pressure, those trials that have reported promising effects have used combinations of yoga, biofeedback, and/or meditation. Some doctors continue to recommend a variety of stress-reducing measures, sometimes tailoring them to the needs and preferences of the person seeking help.

Preliminary laboratory studies in animals and humans suggest that acupuncture may help regulate blood pressure. Most, but not all, preliminary trials also suggest that acupuncture may be an effective way to lower blood pressure. Whether blood pressure goes back up after acupuncture is discontinued remains an unsettled question.

Auricular (ear) acupressure has been reported to be an effective treatment for hypertension, though in one case the improvement was not significantly better than use of traditional herbal medicines.

Spinal manipulation may lower blood pressure (at least temporarily) in healthy people, according to most preliminary and controlled trials. However, some research suggests the effect is no better than the blood pressure-lowering effect of sham (“fake”) manipulation. In hypertensive people, temporary decreases in blood pressure have also been reported after spinal manipulation. However, most, but not all, trials suggest that manipulation produces only short-term decreases in blood pressure in hypertensive people.

Breast Cancer

Breast cancer is a malignancy of the breast that is common in women and rare in men. It is characterized by unregulated replication of cells creating tumours, with the possibility of some of the cells spreading to other sites (metastasis).

This article includes a discussion of studies that have assessed whether certain vitamins, minerals, herbs, or other dietary ingredients offered in dietary or herbal supplements may be beneficial in connection with the reduction of risk of developing breast cancer, or of signs and symptoms in people who have this condition.

This information is provided solely to aid consumers in discussing supplements with their healthcare providers. It is not advised, nor is this information intended to advocate, promote, or encourage self prescription of these supplements for cancer risk reduction or treatment. Furthermore, none of this information should be misconstrued to suggest that

dietary or herbal supplements can or should be used in place of conventional anticancer approaches or treatments.

It should be noted that certain studies referenced below, indicating the potential usefulness of a particular dietary ingredient or dietary or herbal supplement in connection with the reduction of risk of breast cancer, are preliminary evidence only. Some studies suggest an association between high blood and dietary levels of a particular dietary ingredient with a reduced risk of developing breast cancer. Even if such an association were established, this does not mean that dietary supplements containing large amounts of the dietary ingredient will necessarily have a cancer risk reduction effect.

Most breast cancer is not hereditary, although a small percentage of women have a genetic weakness that dramatically increases their risk. Women with a strong family history of breast cancer may choose to explore the possibility of genetic testing with a geneticist, found on the staff of many major hospitals.

The incidence of postmenopausal breast cancer varies dramatically from one part of the world to the other, and those who move from one country to another will, on average, over time, begin to take on the risk of the new society to which they have moved. This evidence strongly suggests that most, though not all, breast cancer is preventable. However, great controversy exists about which factors are most responsible for the large differences in breast cancer incidence that separate high-risk populations from low-risk populations.

A few factors that affect the risk of having breast cancer are widely accepted:

- ☑ The later the age of the first menstrual cycle, the lower the risk.
- ☑ Full-term pregnancy at an early age (teens to early twenties) lowers the risk.
- ☑ Being overweight increases the risk of postmenopausal breast cancer.
- ☑ Use of hormone replacement therapy increases the risk, but this increase in risk has been reported to disappear shortly after hormone use is discontinued.
- ☑ Being older at the time of the last menstrual cycle (early fifties or older) confers a higher risk compared with women who have had their last menstrual cycle at a younger age (late forties or earlier).

Several other factors may affect a woman's risk of getting breast cancer. Many researchers and some doctors believe that long-term (greater than five years) use of oral contraceptives increases the risk of pre-menopausal breast cancer, but not the risk of postmenopausal breast cancer. Also, being overweight appears to slightly reduce the risk of pre-menopausal breast cancer, even though it increases the risk of postmenopausal breast cancer.

Almost all women with non-invasive breast cancer (ductal carcinoma in situ), along with a majority of women diagnosed with node-negative invasive breast cancer, are cured with appropriate conventional treatment. Even when breast cancer is diagnosed after it has spread to lymph nodes, many patients are curable. Once breast cancer has spread to a distant part of the body, conventional treatment sometimes extends life but cannot provide a cure.

What are the symptoms of breast cancer?

The diagnosis of breast cancer is usually begun at the time a painless one-sided lump is discovered by the woman or her physician. In recent years, the diagnosis of breast cancer often begins with suspicious findings from a routine screening mammogram accompanied by no symptoms. In more advanced cases, changes to the contour of the affected breast may occur, and the lump may eventually become immovable.

If breast cancer spreads to a distant part of the body (distal metastasis), symptoms are determined by the location to which the cancer has spread. For example, if breast cancer spreads to bone, it frequently causes bone pain; if it spreads to the brain, it generally causes neurological symptoms, such as headaches that do not respond to aspirin. When it has spread to a distant part of the body, breast cancer also eventually causes severe weight loss, untreatable fatigue-inducing anaemia, and finally death.

Dietary changes that may be helpful

The following dietary changes have been studied in connection with breast cancer.

Avoidance of alcohol

An analysis of studies using the best available methodology found that women who drink alcohol have a higher risk of breast cancer compared with teetotallers. Alcohol consumption during early adulthood may be more of a risk factor than alcohol consumption at a later age.

Some, though not all, studies have reported that alcohol increases oestrogen levels. Increased oestrogen levels might explain the increase in risk.

In a preliminary report, drinkers with low intake of folic acid had a 32% increased risk of breast cancer compared with non-drinkers; however, the excess risk was only 5% in those drinkers who consumed adequate levels of folic acid. In the same report, women taking multivitamins containing folic acid and having at least 1.5 drinks per day had a 26% lower risk of being diagnosed with breast cancer compared with women drinking the same amount of alcohol but not taking folic acid-containing vitamins.

Fibre

Insoluble fibre from grains delays the onset of mammary (breast) cancer in animals. In an analysis of the data from many studies, people who eat relatively high amounts of whole grains were reported to be at low risk for breast cancer.

In some studies, the protective effect of fibre against the risk of breast cancer has been stronger in young women than in older women. This finding might occur because fibre has been reported to lower oestrogen levels in pre-menopausal women but not in postmenopausal women. Other researchers, however, report that fibre appears to equally reduce the risk of breast cancer in women of all ages. One leading researcher has suggested the active components in fibre may be phytate and isoflavones, substances that may provide protection even in the absence of a decrease in oestrogen levels. If these substances do protect against breast cancer, they might be as helpful in older women as in younger women.

Consuming a diet high in insoluble fibre is best achieved by switching from white rice to brown rice and from bakery goods made with white flour or mixed flours to 100% whole wheat bread, whole rye crackers, and whole grain pancake mixes. Refined white flour is

generally listed on food packaging labels as “flour,” enriched flour,” unbleached flour,” durum wheat,” semolina,” or “white flour.” Breads containing only whole wheat are usually labelled “100% whole wheat.”

Vegetarianism

Compared with meat eaters, most, but not all, studies have found that vegetarians are less likely to be diagnosed with cancer. Vegetarians have also been shown to have stronger immune functioning, possibly explaining why vegetarians may be partially protected against cancer. Female vegetarians have been reported to have lower oestrogen levels compared with meat-eating women, possibly explaining a lower incidence of breast cancer that has been reported in vegetarian women.

Fruits and vegetables

An analysis of 17 studies on breast cancer risk and diet found that high consumption of vegetables was associated with a 25% decreased risk of breast cancer compared with low consumption. The same report analyzed 12 studies that found high consumption of fruit was associated with a 6% reduction of breast cancer incidence compared with low consumption. However, when data from only the eight largest and best studies were combined, high intake of fruits and/or vegetables did not correlate with protection from breast cancer. Therefore, the protective effect of fruit and vegetable consumption against breast cancer remains unproven.

Tomatoes

Tomatoes contain lycopene—an antioxidant similar in structure to beta-carotene. Most lycopene in our diet comes from tomatoes, though traces of lycopene exist in other foods. Lycopene has been reported to inhibit the proliferation of cancer cells in test tube research.

A review of published research found that higher intake of tomatoes or higher blood levels of lycopene correlated with a reduced risk of a variety of cancers in 57 of 72 studies. Findings in 35 of these studies were statistically significant. Evidence of a protective effect for tomato consumption was strongest for cancers other than breast cancer (prostate, lung, and stomach cancer), but some evidence of a protective effect also appeared for breast cancer.

Meat and how it is cooked

Most, but not all, studies show that consumption of meat is associated with an increased risk of breast cancer. This association probably depends in part on how well the meat is cooked. Well-done meat contains more carcinogenic material than does lightly cooked meat. Evidence from preliminary studies shows that women who eat well-done meat have a high risk of breast cancer. Genetic factors may determine which women increase their risk of breast cancer by eating well-done meat.

Fish

Fish eaters have been reported to have a low risk of breast cancer. The omega-3 fatty acids found in fish are thought by some researchers to be the components of fish responsible for protection against cancer.

Coffee, unrelated to risk

Coffee drinking has been reported to increase breast pain associated with no cancerous lumps in the breast—a group of conditions commonly called fibrocystic breast disease.

The presence of some forms of fibrocystic breast disease has been reported by some researchers to increase the risk of breast cancer. As a result of these separate findings, some women may be concerned coffee drinking might increase the risk of breast cancer. However, most research has shown that coffee drinkers are at no higher risk of breast cancer than are women who do not drink coffee.

Olive oil

Olive oil consumption has been associated with a reduced risk of breast cancer in several preliminary reports. Oleic acid, the main fatty acid found in olive oil, does not appear to be the cause of this protective effect, and scientists now guess that some as-yet undiscovered substance in olive oil might be responsible for the apparent protective effect of olive oil consumption.

The dilemma over dietary fat

Olive oil and fish are two sources of dietary fat considered potentially helpful in protecting against breast cancer. Each has been discussed separately above. The information below discusses fat sources that some researchers are concerned might increase the risk of cancer.

High-fat diets increase the risk of mammary cancer in animals. From country to country, breast cancer risk in women is proportionate to the level of total fat consumed in the diet. Oestrogen levels, body weight, and breast density have all been reported to decrease when women are put on low-fat diets—all changes that are thought to reduce the risk of breast cancer. Moreover, breast cancer patients have been reported to reduce their chances of survival by eating a diet high in saturated fat. (Saturated fat is found mostly in meat and dairy fat.) Similarly, breast cancer patients have been reported to be at increased risk of suffering a recurrence if they eat higher levels of fatty foods, such as butter, margarine, red meat, and bacon.

Analysis of human trials, using a research design dependent on the memories of subjects, also has shown women consuming high-fat diets to be at high risk of breast cancer. In some cases, the correlation has been quite strong. However, most, but not all, “prospective” studies—which avoid problems caused by faulty memories—have not found any association between fat intake and the risk of breast cancer.

Why do some research findings suggest that fat increases the risk of cancer and other studies find no association? Some studies finding dietary fat unrelated to cancer risks have not factored out the effects of olive oil or fish fat; both may protect against cancer. Adding them to the total dietary fat intake and then studying whether “more fat causes more cancer” is therefore misleading. Some studies finding no association between fat intake and breast cancer have made one or both of these errors.

Scientists know cancers caused by diet most likely occur many years after the causative foods are regularly consumed. When one group of researchers compared dietary intakes to cancer rates occurring ten years after the consumption of food, and also eliminated from consideration the effect of fat from fish consumption, they found a high degree of correlation between consumption of animal fat (other than from fish) and the risk of breast cancer death rates for women at least 50 years of age.

In the debate over whether dietary fat increases breast cancer risks, only one fact is indisputable: women in countries that consume high amounts of meat and dairy fat have

a high risk of breast cancer, while women in countries that mostly consume rice, soy, vegetables, and fish (instead of dairy fat and meat) have a low risk of breast cancer.

The complex relationship between soy consumption and risk

Asian countries in which soy consumption is high generally have a low incidence of breast cancer. However, the dietary habits in these countries are so different from diets in high-risk countries that attributing protection from breast cancer specifically to soy foods on the basis of this evidence alone is premature. Similarly, within a society, women who frequently consume tofu have been reported to be at low risk of breast cancer. Consumption of tofu might only be a marker for other dietary or lifestyle factors that are responsible for protection against breast cancer.

Genistein, one of the isoflavones found in many soy foods, inhibits proliferation of breast cancer cells in test tube studies. Most animal studies report that soybeans and soy isoflavones protect against mammary cancer. However, the protective effect in animals has occurred primarily when soy has been administered before puberty. If the same holds true in humans, consuming soy products in adulthood might provide little, if any, protection against breast cancer.

The findings of several recent studies suggest that consuming soy might, under some circumstances, increase the risk of breast cancer. When ovaries were removed from animals—a situation related to the condition of women who have had a total hysterectomy—dietary genistein was reported to increase the proliferation of breast cancer cells. When pregnant rats were given genistein injections, their female offspring were reported to be at greater risk of breast cancer. Although pre-menopausal women have shown decreases in oestrogen levels in response to soy consumption, pro-oestrogenic effects have also been reported. When pre-menopausal women were given soy isoflavones, an increase in breast secretions resulted—an effect thought to elevate the risk of breast cancer. In yet another trial, healthy breast cells from women previously given soy supplements containing isoflavones showed an increase in proliferation rates—an effect that might also increase the risk of breast cancer.

The commonly held belief that consuming soybeans or isoflavones such as genistein will protect against breast cancer is, therefore, far from proven. Possibly, consuming soybeans in childhood may ultimately be proven to have a protective effect. Doing the same in adulthood, however, may have very different effects.

Some scientists, at least under some circumstances, remain hopeful about the potential for soy to protect against breast cancer. These scientists recommend consumption of foods made from soy (such as tofu), as opposed to taking isoflavone supplements. Several substances in soybeans other than isoflavones have shown anticancer activity in preliminary research.

Reduction in sugar

Preliminary studies have reported associations between an increased intake of sugar or sugar-containing foods and an increased risk of breast cancer, though this link does not appear consistently in published research. Whether these associations exist because sugar directly promotes cancer or because sugar consumption is only a marker for some other dietary or lifestyle factor remains unknown.

Lifestyle changes that may be helpful

The following lifestyle changes have been studied in connection with breast cancer.

Exercise and prevention

Girls who engage in a significant amount of exercise have been reported to be less likely to get breast cancer as adults. Although some doctors speculate that exercise in preadolescent girls might reduce the risk of eventually getting breast cancer by reducing the number of menstrual cycles and therefore exposure to oestrogen, these effects may occur only in girls engaging in very strenuous exercise.

Most, but not all, studies find that adult women who exercise are less likely to get breast cancer. Women who exercise have also been reported to have a reduced risk of high-risk mammography patterns compared with inactive women.

Exercise in adulthood might help protect against breast cancer by lowering blood levels of oestrogen or by helping maintain ideal body weight. In addition to the preventive effects of exercise, aerobic exercise has been reported to reduce depression and anxiety in women already diagnosed with breast cancer.

Smoking and risk

Some studies have found an association between smoking and an increased risk of breast cancer, including exposure to second-hand smoke. However, several reports have either found no association or have reported an association between smoking and an apparent protection against breast cancer. Some of the studies reporting that smoking is detrimental have found that exposure to cigarette smoke during childhood appears to be most likely to increase the risk of breast cancer.

The mind-body connection

In some studies, the risk of breast cancer has been reported to be higher in women who have experienced major (though not minor) depression in the years preceding diagnosis. Some, but not all, studies have found that exposure to severely stressful events increases a woman's chance of developing breast cancer. In one study, breast cancer patients exposed to severely stressful events, such as death of a spouse or divorce, had more than five times the risk of suffering a recurrence compared with women not exposed to such stressors. Although stress has long been considered as a possible risk factor, some studies have not found significant correlations between psychological stressors and breast cancer risk or the risk of breast cancer recurrence. Similarly, experiencing psychological distress (independent of external stressors) has, in some reports, not been associated with a reduction in survival or the risk of suffering a breast cancer recurrence.

Exposure to psychological stress has been reported to weaken the immune system of breast cancer patients. Strong social support has been reported to increase immune function in breast cancer patients. These findings suggest a possible way in which the mind might play a role in affecting the risk of a breast cancer recurrence.

In one study, breast cancer patients with strong social support in the months following surgery had only half the risk of dying from the disease during a seven-year period compared with patients who lacked anyone to confide in. After 10 and 15 years, breast cancer patients with a helpless and hopeless attitude or with an attitude of stoicism were much less likely to survive compared with women who had what the researchers called a

"fighting spirit." In a five-year study, the same helpless/hopeless attitude correlated with an increased risk of recurrence or death in breast cancer patients, but a "fighting spirit" did not correlate with special protection against recurrence or death. One trial reported that psychological therapy for hopeless/helpless breast cancer patients was capable of changing these attitudes and reducing psychological distress in only eight weeks.

Several trials using a variety of psychological interventions have reported increased life expectancy in women receiving counselling or psychotherapy compared with women who did not receive psychological intervention —even in women with late-stage disease. In a now-famous trial, late-stage breast cancer patients in a year-long, 90-minute-per-week support group lived on average twice as long as a group of similar patients who did not receive such support.

Finally, relaxation training has been reported to reduce psychological distress in breast cancer patients, and group therapy and hypnosis have reduced pain in late-stage breast cancer patients.

Even extensive psychological support (weekly peer support, family therapy, individual counselling, and use of positive mental imagery) has not led to a clear increase in breast cancer survival in every study. Why some studies clearly find mind-body connections in regard to breast cancer risk, recurrence, or survival, while other studies find no such connection, remains unclear.

Overweight and risk

Being overweight increases the risk of postmenopausal breast cancer, a fact widely accepted by the research community. Overweight does not increase the risk of pre-menopausal breast cancer and even may be associated with a slightly reduced risk of breast cancer in young women.

Nutritional supplements that may be helpful

The following nutritional supplements have been studied in connection with breast cancer.

Folic acid

Among women who drink alcohol, those who consume relatively high amounts of folate from their diet have been reported to be at reduced risk of breast cancer, compared with women who drink alcohol but consumed less folate, according to a preliminary study. In a similar report, consumption of folic acid-containing supplements was associated with a lower risk of breast cancer in women who drank alcohol, compared with women who drank alcohol but did not take such supplements.

The damaging effect alcohol has on DNA—the material responsible for normal replication of cells—is partially reversed by folic acid. Therefore, a potential association between both dietary folate and folic acid supplements and protection against breast cancer in women who drink alcohol is consistent with our understanding of the biochemical effects of these substances. A combined intake from food and supplements of at least 600 mcg per day was associated with a 43% reduced risk of breast cancer in women who consumed 1.5 drinks per day or more, compared with women who drank the same amount but did not take folic acid-containing supplements.

No research has yet explored the effect of folic acid supplementation in people who have already been diagnosed with cancer. Cancer patients taking the chemotherapy drug methotrexate must not take folic acid supplements without the direction of their oncologist.

Selenium

The association between relatively higher blood levels of selenium and lower risks of cancer in men has been fairly consistent. However, most, though not all, studies have found selenium status to be unrelated to cancer risk in women, particularly in relation to cancers that strike only women. In fact, a few studies have reported that exposure to higher amounts of selenium —including selenium from supplements —are associated with a higher risk of several cancers in women, though these studies have been criticized.

In a famous double-blind trial that reported dramatic reductions in the incidence of lung, colon, and prostate cancers as a result of selenium supplementation, of the few women who got breast cancer during the trial, more were taking selenium than were taking placebo, though this difference may well have been due to chance. Thus, the findings of this famous trial also do not support the idea that selenium supplementation protects against breast cancer.

In contrast, animal studies generally find that selenium helps protect against mammary cancer, and associations between higher selenium status and decreased risk of breast cancer in women have also occasionally been reported. Despite these hopeful findings, most studies suggest that higher selenium status confers no protection against breast cancer.

Vitamin E

Although some preliminary evidence suggests that vitamin E may protect against breast cancer, most research does not suggest a protective effect. In a preliminary study, women taking vitamin E supplements had the same risk of breast cancer as did other women. However, in one study, women with of low blood levels of both selenium and vitamin E had a tenfold higher risk of breast cancer compared with women having higher levels of both nutrients. Although vitamin E and selenium function together in the body, the meaning of this dramatic finding is not clear; most studies examining the effects of vitamin E or selenium separately have suggested that neither protects against breast cancer.

Although one form of vitamin E—alpha tocopheryl succinate—has been touted as a potential treatment for women with breast cancer, only test tube studies suggest that it may have anticancer activity, and no trials have been conducted in breast cancer patients.

Vitamin D

Breast cancer rates have been reported to be relatively high in areas of low exposure to sunlight. Sunlight triggers the formation of vitamin D in the skin, which can be activated in the liver and kidneys into a hormone with great activity. This activated form of vitamin D causes “cellular differentiation”—essentially the opposite of cancer.

The following evidence indicates that vitamin D might have a protective role against breast cancer:

- ☑ Synthetic vitamin D-like molecules have prevented the equivalent of breast cancer in animals.
- ☑ Activated vitamin D appears to have anti-oestrogenic activity.
- ☑ Both sunlight and dietary exposure to vitamin D have correlated with a reduced risk of breast cancer.

Activated vitamin D

Activated vitamin D comes in several forms. One of them—1,25 dihydroxycholecalciferol—is an exact duplicate of the hormone made in the human body.

The following preliminary, non-clinical evidence supports the idea that activated vitamin D may be of help to some breast cancer patients:

- ☑ In combination with tamoxifen, a synthetic, activated-vitamin D-like molecule has inhibited the growth of breast cancer cells in test tube research.
- ☑ Synthetic vitamin D-like molecules induce tumour cell death in breast cancer cells.
- ☑ Activated vitamin D suppresses the growth of human cancer cells transplanted into animals.
- ☑ In test tube research, activated vitamin D has increased the anticancer action of chemotherapy.

In a preliminary trial, activated vitamin D was applied topically to the breast, once per day for six weeks, in 19 patients with breast cancer. Of the 14 patients who completed the trial, three showed a large reduction in tumour size, and one showed a minor improvement. Those who responded had tumours that contained receptors for activated vitamin D. However, other preliminary reports have not found that high levels of these receptors consistently correlate with a better outcome.

With a doctor's prescription, compounding pharmacists can put activated vitamin D, a hormone, into a topical ointment. Due to potential toxicity, use of this hormone, even topically, requires careful monitoring by a physician. Standard vitamin D supplements are unlikely to duplicate the effects of activated vitamin D in women with breast cancer. The patients in the breast cancer trial all had locally advanced disease.

Melatonin

Melatonin has been reported to have anticancer activity against breast cancer cells in most though not all test tube studies. In a preliminary trial, breast cancer patients were studied who previously had responded either not at all or only temporarily to treatment with the drug tamoxifen. During the trial, these women were given tamoxifen again, this time with added melatonin. Blood levels of IGF-1, a marker for progression of breast cancer, declined significantly. Of fourteen patients, four showed evidence of tumour shrinkage that lasted an average of eight months.

Most cancer trials studying the effects of melatonin have used 20 mg of melatonin per 24 hours, all taken at bedtime. No one should take such a high amount of this hormone without the supervision of a healthcare professional.

Coenzyme Q10 (CoQ10)

French researchers have reported that the lower the blood level of CoQ10 in breast cancer patients, the worse the chance of remaining free of disease. For several years, researchers from Denmark and the United States have been studying the effects CoQ10 in a group of 32 breast cancer patients who were either at high risk of suffering a recurrence or had already been diagnosed with advanced disease. After 18 months, only one patient had suffered a recurrence, all were still alive, those who did not have advanced disease at the beginning of the trial had not progressed to advanced disease, one patient with advanced disease had stabilized, and two patients with advanced disease had significantly improved. Patients continued to do well after two years of supplementation, and after three to five years, surprising improvements were reported in two patients who had had advanced disease at the beginning of the trial.

At first, 90 mg of CoQ10 per day was used. In subsequent reports, the amount of CoQ10 was increased until some women were receiving 390 mg per day. Initially, the CoQ10 was accompanied by the use of many other supplements. The researchers of this trial have attributed the therapeutic effects observed primarily to CoQ10 and, in later reports, no further mention of other supplements was made.

This preliminary investigation has been conducted with no control group, and published reports have provided only sketchy details about the conditions of most of the women being studied. Some of the patients were given conventional treatments along with CoQ10. Therefore, CoQ10 remains unproven as a cancer treatment.

Fibre

Although fibre is available in supplement form (such as Metamucil®), most fibre consumption results from eating food. Preliminary evidence suggests that high fibre consumption may reduce the risk of breast cancer. See the discussion of fibre and possible prevention of breast cancer in Dietary changes, above.

Indole-3-carbinol

Cruciferous vegetables—broccoli, Brussels sprouts, cauliflower, and cabbage—contain a substance called indole-3-carbinol (I3C). In preliminary research, I3C has been reported to affect the metabolism of oestrogen in a way that might protect against breast cancer, an idea supported by animal and test tube research. No research trials have yet investigated the effects of I3C supplementation in women with breast cancer.

Diindolylmethane

Diindolylmethane is a substance also found in cruciferous vegetables. Test tube and animal studies suggest that it may help protect against breast cancer. However, no clinical trials with cancer patients given diindolylmethane have yet been published.

Calcium D-glucarate (D-Glucaric acid)

Calcium D-glucarate is available as a supplement, and it is also found in fruits and vegetables in a slightly altered form—D-glucaric acid. Preliminary evidence suggests that calcium D-glucarate indirectly helps the body lower its burden of oestrogen, an effect that may reduce the risk of breast cancer. Although animal research supports such a possibility, no human trials have been published to evaluate whether calcium D-glucarate has a therapeutic or preventive effect.

IP-6
IP-6 (also called Inositol hexaphosphate, phytate, or phytic acid) is found in many foods, particularly oat bran, wheat bran, and unleavened (flat) bread. Until recently, most IP-6 research focused on interference with the absorption of minerals—a side effect of consuming IP-6. More recently, however, animal studies have found that IP-6 has anticancer activity. No human trials using IP-6 supplements to prevent or treat breast cancer have yet been published.

Soy isoflavones, including genistein
No research has directly investigated whether soy isoflavone supplements prevent breast cancer or help people already diagnosed with this disease. Nonetheless, considerable preliminary information has been gathered about the relationship between soy isoflavones and breast cancer. For more information, see the discussion about soy in Dietary changes, above.

Conjugated linoleic acid
Preliminary animal and test tube research suggests that CLA might reduce the risk of cancers at several sites, including breast, prostate, colorectal, lung, skin, and stomach. Whether CLA will have a similar protective effect for people has yet to be demonstrated in human research.

Herbs that may be helpful
The following herbs have been studied in connection with breast cancer.

Garlic and onion
Preliminary studies hunting for associations between consumption of garlic (Allium sativum) and onion(Allium cepa) and a reduced risk of breast cancer have produced only mixed results; thus, there is no proof that consumption of either food helps prevent the risk of breast cancer.

Cloud mushroom (Coriolus versicolor)
Coriolus is a Chinese mushroom that has been reported to improve parameters of immune function. A Japanese extract from this mushroom called Polysaccharide Krestin (PSK) has been studied in many trials with cancer patients, often in conjunction with conventional treatment PSK's effects in women with breast cancer have been somewhat inconsistent. One double-blind trial reported that some groups of women with breast cancer, given PSK along with chemotherapy, had better outcomes than those who took chemotherapy alone. Another double-blind trial reported 81% survival in breast cancer patients given PSK plus chemotherapy, compared with 65% in those given chemotherapy alone, though this difference did not quite reach statistical significance. A third double-blind trial did not find PSK to be beneficial for women with breast cancer.

PSK is not readily available in the United States and is available in Japan only by prescription. Although hot water-extracted products made from Coriolus versicolor are available in the United States without prescription, the extent to which these herbal products produce the effects of Japanese PSK remains unknown.

Eleuthero (Eleutherococcus senticosus, Acanthopanax s.)
Also known as Siberian ginseng, eleuthero has been shown to enhance immune function in preliminary Russian trials studying people with cancer, particularly breast cancer. These trials typically used 1to 2 ml of a fluid extract taken three times per day for

at least one month. Most of the people in these trials were also treated with chemotherapy, radiation therapy, and/or surgery. Several of the Russian trials showed fewer side effects from conventional therapies among those who also took eleuthero extracts. No information is available on the ability of eleuthero to prevent cancer, nor have clinical trials yet explored whether eleuthero extracts affect either recurrence of breast cancer or survival in women with breast cancer.

European mistletoe (Viscum album)

Special extracts of European mistletoe injected under the skin has been studied in several positive and negative double-blind trials with cancer patients. A double-blind trial of women with breast cancer (all treated with chemotherapy) found that those who received mistletoe injections had improved immunity and quality of life compared with those who took placebo. The use of oral mistletoe preparations has not been studied in breast cancer patients. Mistletoe injections (usually of a product called Iscador®) are available only through physicians and are not readily available in the United States. It is unknown if American mistletoe (Phoradendron leucarpum) would provide the same effect as European mistletoe.

Green tea

In one Japanese study, green tea consumption was associated with increased survival time and decreased spread of cancer to lymph nodes in women with early stages of breast cancer, but not in breast cancer patients with more advanced disease. Recurrence rates were found to be lowest in those who drank at least five cups per day. Despite these associations, however, no proof yet exists that green tea consumption helps breast cancer patients or helps healthy women prevent breast cancer.

Brittle Nails

Brittle nails can be weak, thin, nails that peel or break easily, and/or grow slowly.

The common condition of brittle nails is often not definitively linked with any known cause. Nonetheless, natural medicine may be able to help strengthen brittle nails.

Most conditions that affect nails are unrelated to nutrition; they are caused by a lack of oxygen associated with lung conditions, haemorrhage due to infection, or inflammation around the nail due to infection. If there is any question about what the problem is, it is important to get a diagnosis from a healthcare practitioner.

What are the symptoms of brittle nails?

People with brittle nails may have frequent or easy breaking, cracking, splitting, or tearing of their nails.

Nutritional supplements that may be helpful

Nutrition can affect the health of nails in a variety of ways. Iron deficiency may cause spoon-shaped nails. For years, some doctors have believed zinc deficiency causes white spots to appear on nails. In China, excessive selenium has been linked to nails actually falling out.

Biotin, a B vitamin, is known to strengthen hooves in animals. As a result, Swiss researchers investigated the use of biotin in strengthening brittle fingernails in humans, despite the fact that it remains unclear exactly how biotin affects nail structure. An

uncontrolled trial of 2.5 mg biotin per day found improved firmness and hardness in almost all cases after an average treatment time of 5.5 months. In a controlled trial using 2.5 mg of biotin per day, women with brittle nails, who had their nail thickness measured before and at six to fifteen months after, found their nail thickness increased by 25%. As a result, splitting of nails was reduced. In an uncontrolled study of people who had been taking biotin for brittle nails in America, 63% showed improvement from taking biotin. Although the amount of research on the subject is quite limited and positive effects do not appear in all people, those people having brittle nails may want to consider a trial period of at least several months, using 2.5 mg per day of biotin.

Gelatine has been marketed as a remedy for brittle nails since the turn of the twentieth century and has been mentioned in medical journals at least since the 1950s. Gelatine is a slaughterhouse by-product, made from the hooves and other inedible connective tissue of cows. While some people claim success using gelatine to strengthen brittle nails, others claim that the remedy is ineffective, and that the real cause of brittle nails is lack of moisture, not protein deficiency.

One doctor has observed that supplementation with glucosamine sulphate (amount not specified) can increase the growth rate and strength of fingernails and toenails; however, no controlled trials have been done.

Herbs that may be helpful

Anecdotal reports suggest that horsetail may be of some use in the treatment of brittle nails. This may be due to the high content of silicic acid and silicates in horsetail, which provide approximately 2 to 3% elemental silicon.

Bronchitis

Bronchitis is an inflammation of the mucous membranes of the deep inner lung passages called the bronchial tree.

Bronchitis may be either acute or chronic. Acute bronchitis is frequently caused by a viral or bacterial infection. Acute bronchitis may also result from irritation of the mucous membranes by environmental fumes, acids, solvents, or tobacco smoke. Bronchitis usually begins with a dry, non-productive cough. After a few hours or days, the cough may become more frequent and produce mucus. A secondary bacterial infection may occur, in which the sputum (bronchial secretions) may contain pus. People whose cough and/or fever continues for more than seven days should visit a medical practitioner.

Chronic bronchitis may result from prolonged exposure to bronchial irritants. Cigarette smoking, environmental toxins, and inhaled allergens can all cause chronic irritation of the bronchi. The cells lining the bronchi produce excess mucus in response to the chronic irritation; this excess mucus production can lead to a chronic, productive cough.

Bronchitis can be particularly dangerous in the elderly and in people with compromised immune systems. These people should see a doctor if they develop a respiratory infection.

What are the symptoms of bronchitis?

Acute infectious bronchitis is often preceded by signs of an upper respiratory tract infection: stuffy or runny nose, malaise, chills, fever, muscle pain, and sore throat. The

cough is initially dry and does not produce mucus. Later, small amounts of thick green or green-yellow sputum may be coughed up.

Chronic bronchitis is characterized by a productive cough that initially occurs only in the morning.

Dietary changes that may be helpful

Dietary factors may influence both inflammatory activity and antioxidant status in the body. Increased inflammation and decreased antioxidant activity may each lead to an increased incidence of chronic diseases, such as chronic bronchitis. People suffering from chronic bronchitis may experience an improvement in symptoms when consuming a diet high in anti-inflammatory fatty acids, such as those found in fish. In a double-blind study of children with recurrent respiratory tract infections, a daily essential-fatty-acid supplement (containing 855 mg of alpha-linolenic acid and 596 mg of linoleic acid) reduced both the number and the duration of recurrences.

In people with bronchitis, lipids in the lung tissue may undergo oxidation damage (also called free-radical damage), particularly when the bronchitis is a result of exposure to environmental toxins or cigarette smoke. A diet high in antioxidants may protect against the free radical-damaging effect of these toxins. Studies comparing different populations have shown that increasing fruit and vegetable (and therefore, antioxidant) consumption may reduce the risk of developing chronic bronchitis.

Food and environmental allergies may be triggering factors in some cases of chronic bronchitis. Cows' milk allergy has been associated with bronchitis in children, and some doctors believe that dairy products may increase mucus production and, therefore, that people suffering from either acute or chronic bronchitis should limit their intake of dairy products. Ingestion of simple sugars (such as sucrose or fructose) can lead to suppression of immune function; therefore, some doctors believe simple sugars should be avoided during illness.

Lifestyle changes that may be helpful

Breast-feeding provides important nutrients to an infant and improves the functioning of the immune system. Studies have shown that breast-feeding prevents the development of lower respiratory tract infections during infancy. Whether that protective effect persists into adulthood is not known. Exposure to environmental chemicals, including passive smoke, can increase the incidence of respiratory illness among children.

Chronic bronchitis is frequently associated with smoking and/or environmental exposure to chemicals or allergens. These exposures should be avoided to allow the cells of the bronchi to recover from chronic irritation and to decrease the burden on the immune system.

Nutritional supplements that may be helpful

In a double-blind study of elderly patients hospitalized with acute bronchitis, those who were given 200 mg per day of vitamin C improved to a significantly greater extent than those who were given a placebo. The common cold may lead to bronchitis in susceptible people, and numerous controlled studies, some double-blind, have shown that vitamin C supplements can decrease the severity and duration of the common cold in otherwise healthy people.

Vitamin C and vitamin E may prevent oxidative damage to the lung lipids by environmental pollution and cigarette smoke exposure. It has been suggested that amounts in excess of the RDA (recommended dietary allowance) are necessary to protect against the air pollution levels currently present in North America, although it is not known how much vitamin E is needed to produce that protective effect.

A review of 39 clinical trials of N-acetyl cysteine (NAC) found that 400 to 600 mg per day was a safe and effective treatment for chronic bronchitis. NAC supplementation was found to reduce the number of aggravations of the illness in almost 50% of people taking the supplement, compared with only 31% of those taking placebo. Smokers have also been found to benefit from taking NAC.

In addition to helping break up mucus, NAC may reduce the elevated bacterial counts that are often seen in the lungs of smokers with chronic bronchitis. In another double-blind study, people with chronic bronchitis who took NAC showed an improved ability to expectorate and a reduction in cough severity. These benefits may result from NAC's capacity to reduce the viscosity (thickness) of sputum.

Vitamin A levels are low in children with measles, an infection that can result in pneumonia or other respiratory complications. A number of studies have shown that supplementation with vitamin A decreased complications and deaths from measles in children living in developing countries where deficiencies of vitamin A are common. However, little to no positive effect, and even slight adverse effects, have resulted from giving vitamin A supplements to prevent or treat infections in people living in countries where most people consume adequate amounts of vitamin A. Therefore, vitamin A supplements may only be useful for people with bronchial infections who are known to be deficient in vitamin A.

The thymus gland plays a number of important roles in the functioning of the immune system. Thymus extract from calves, known as Thymomodulin®, has been found, in a double-blind study, to decrease the frequency of respiratory infections in children who were prone to such infections. The amount of Thymomodulin used in that study was 3 mg per kg of body weight per day.

Herbs that may be helpful

Several types of herbs may help people with bronchitis, either by treating underlying infection, by relieving inflammation, or by relieving symptoms such as cough. For clarity, the table below summarizes which herbs are in each category of action. Some herbs have more than one action. Herbs listed in the table have not necessarily been proven to be effective. The herbs are discussed in more detail following the table.

Expectorant herbs help loosen bronchial secretions and make elimination of mucus easier. Numerous herbs are traditionally considered expectorants, though most of these have not been proven to have this effect in clinical trials. Anise contains a volatile oil that is high in the chemical constituent anethole and acts as an expectorant.

Horehound has expectorant properties, possibly due to the presence of a diterpene lactone in the plant, which is known as marrubiin.

Mullein has been used traditionally as a remedy for the respiratory tract, including bronchitis. The Saponins in mullein may be responsible for its expectorant actions.

Pleurisy root is an expectorant and is thought to be helpful against all types of respiratory infections. It is traditionally employed as an expectorant for bronchitis. However, owing to the cardiac glycosides it contains, pleurisy root may not be safe to use if one is taking (heart medications. This herb should not be used by pregnant women.

Anti-inflammatory herbs may help people with bronchitis. Often these herbs contain complex polysaccharides and have a soothing effect; they are also known as demulcents. Plantain is a demulcent that has been documented in two preliminary trials conducted in Bulgaria to help people with chronic bronchitis. Other demulcents traditionally used for people with bronchitis include mullein, marshmallow, and slippery elm. Because demulcents can provoke production of more mucus in the lungs, they tend to be used more often in people with dry coughs.

Elecampane is a demulcent that has been used to treat coughs associated with bronchitis, asthma, and whooping cough. Although there have been no modern clinical studies with this herb, its use for these indications is based on its high content of soothing mucilage in the forms of insulin and alantalactone. However, the German Commission E monograph for elecampane does not approve the herb for bronchitis.

Ivy leaf is approved in the German Commission E monograph for use against chronic inflammatory bronchial conditions. One double-blind human trial found ivy leaf to be as effective as the drug ambroxol for chronic bronchitis. Ivy leaf is a non-demulcent anti-inflammatory.

Chinese skullcap might be useful for bronchitis as an anti-inflammatory. However, the research on this herb is generally of low quality.

Antimicrobial and immune stimulating herbs may also potentially benefit people with bronchitis. Echinacea is widely used by herbalists for people with acute respiratory infections. This herb stimulates the immune system in several different ways, including enhancing macrophage function and increasing T-cell response. Therefore, Echinacea may be useful for preventing a cold, flu, or viral bronchitis from progressing to a secondary bacterial infection.

Thyme contains an essential oil (thymol) and certain flavonoids. This plant has antispasmodic, expectorant, and antibacterial actions, and it is considered helpful in cases of bronchitis. One preliminary trial found that a mixture containing volatile oils of thyme, mint, clove, cinnamon, and lavender diluted in alcohol, in the amount of 20 drops three times daily, reduced the number of recurrent infections in people with chronic bronchitis.

Horseradish contains substances similar to mustard, such as glucosinolates and allyl isothiocynate. In addition to providing possible antibacterial actions, these substances may also have expectorant properties that are supportive for persons with bronchitis.

Eucalyptus leaf tea is used to treat bronchitis and inflammation of the throat, and is considered antimicrobial. In traditional herbal medicine, eucalyptus tea or volatile oil is often used internally as well as externally over the chest; both uses are approved for people with bronchitis by the German Commission E.

Lobelia contains many active alkaloids, of which lobeline is considered the most active. Very small amounts of this herb are considered helpful as an antispasmodic and antitussive agent (a substance that helps suppress or ease coughs). Anti-inflammatory properties of the herb have been demonstrated, which may be useful, since bronchitis is associated with inflammation in the bronchi. Lobelia should be used cautiously, as it may cause nausea and vomiting.

Bruising

Bruising occurs after traumatic injury and consists of swelling and discoloration under the skin but no disruption of the skin.

Bruising is a normal body response to trauma. It is only when bruising occurs often and from very minor (often unnoticed) trauma that a problem may exist. Refer to the capillary fragility article for more information. While easy bruising is usually not a cause for concern, people who experience this problem should consult a physician to rule out more serious conditions that may cause bruising. Medical causes of easy bruising sometimes may be diagnosed from a few blood tests conducted by a doctor. More often, however, no clear cause for easy bruising is found.

What are the symptoms of bruising?

Bruises look like areas of blue to purple-coloured skin that may turn yellow to dark brown over the course of a few days.

Dietary changes that may be helpful

Even minor dietary deficiencies of vitamin C can lead to increased bruising. People who experience easy bruising may benefit from eating more fruits and vegetables—common dietary sources of vitamin C and flavonoids.

Nutritional supplements that may be helpful

Doctors often suggest that people who experience easy bruising supplement with 100 mg to 3 grams of vitamin C per day for several months. Controlled research is limited, but vitamin C supplements have been shown to reduce bruising in people with low vitamin C intake. Flavonoids are often recommended along with vitamin C. Flavonoids are vitamin-like substances that can help strengthen capillaries and therefore may also help with bruising. Flavonoids may also increase the effectiveness of vitamin C; citrus flavonoids, in particular, improve the absorption of vitamin C. Older preliminary research suggested that vitamin C, 400–800 mg per day, in combination with 400–800 mg per day of the flavonoid, hesperidin, reduced bruising in menopausal women. A small, preliminary trial in Germany gave three people with progressive pigmented purpura (a chronic bruising disorder) 1,000 mg per day of vitamin C and 100 mg per day of the flavonoid rutoside. After four weeks, noticeable bruising was no longer apparent and did not recur in the three month period after treatment was stopped. Controlled research is needed to better establish whether vitamin C and flavonoids are effective for easy bruising.

Herbs that may be helpful

In traditional herbal medicine, a compress or ointment of sweet clover is applied to bruises. Enough should be applied to cover the bruise, and several applications per day may be necessary to improve healing.

Arnica is considered by some practitioners to be among the best vulnerary (wound-healing) herbs available. As a homeopathic remedy, arnica is often recommended as both an internal and topical means to treat minor injuries. Some healthcare practitioners recommend mixing 1 tablespoon of arnica tincture in 500 ml water, then soaking thin cloth or gauze in the liquid and applying it to the injured area for at least 15 minutes four to five times per day.

Comfrey is also widely used in traditional medicine as a topical application to help heal wounds.

Burns

Burns are damage to tissue that can result from exposure to extreme heat, chemicals, electricity, or radioactive material.

For minor burns, natural medicine may be helpful after the burn is cleaned with soap and cold water and gently dried. Because of the risk of infection, topical applications should not be made to blistered or open burn wounds, unless under medical supervision. Extensive burns or burns causing more than minor discomfort should be treated by a healthcare professional.

What are the symptoms of burns?

Symptoms depend on the severity and cause of the burn but usually include pain and sensitivity to touch. The skin may appear swollen, blistered, dried, charred, weeping, or red, grey, or black-coloured.

Dietary changes that may be helpful

The body repairs and builds new tissues in a process called anabolism. Adequate amounts of calories and protein are required for anabolism, as the skin and underlying tissues are comprised of protein and energy is needed to fuel repair mechanisms. While major injuries requiring hospitalization raise protein and calorie requirements significantly, injuries such as minor burns should not require changes from a typical, healthful diet.

Nutritional supplements that may be helpful

Antioxidants may protect the skin from sunburn due to free radical-producing ultraviolet rays. Combinations of 1,000 to 2,000 IU per day of vitamin E and 2,000 to 3,000 mg per day of vitamin C, but neither given alone, have a significant protective effect against ultraviolet rays, according to double-blind studies. Oral synthetic beta-carotene alone was not found to provide effective protection in a recent double-blind study, it may be effective in combination with topical sunscreen. However, other carotenoids such as lycopene may be more important for ultraviolet protection. One recent uncontrolled trial found 40 grams per day of tomato paste providing 16 mg per day lycopene for 10 weeks protected against burning by ultraviolet rays. Another uncontrolled trial found 25 mg/day of natural mixed carotenoids also protected against ultraviolet radiation, especially when combined with 500 IU per day of vitamin E.

Double-blind research has also shown that topical application of antioxidants protects against sunburn if used before, but not after, exposure.[1]

Despite a lack of research on the subject, using vitamin E topically on minor burns is a popular remedy. This makes sense, because some of the damage done to the skin is oxidative, and vitamin E is an antioxidant. Some doctors suggest simply breaking open a capsule of vitamin E and applying it to the affected area two or three times per day. Vitamin E forms are listed as either "tocopherol" or "tocopheryl" followed by the name of what is attached to it, as in "tocopheryl acetate." While both forms are active when taken by mouth, the skin utilizes the tocopheryl forms very slowly.[1] Therefore, those planning to apply vitamin E to the skin should buy the tocopherol form.

Colloidal silver has been used as a topical antiseptic for minor burns for over a century. Internal use of colloidal silver is not recommended for this condition.

Herbs that may be helpful

Aloe is another popular remedy for minor burns and a small preliminary study found it more effective than Vaseline in treating burns. The stabilized aloe gel is typically applied to the affected area of skin three to five times per day. Older case studies reported that aloe gel applied topically could help heal radiation burns, but a large, double-blind trial did not find aloe effective in this regard.

Calendula cream may be applied to minor burns to soothe pain and help promote tissue repair. It has been shown in animal studies to be anti-inflammatory and to aid repair of damaged tissues. The cream is applied three times per day. Plantain is regarded as similar to calendula in traditional medicine, though usually the whole leaf is applied directly to the burn as a poultice.

Gotu kola has been used in the medicinal systems of central Asia for centuries to treat numerous skin diseases. Saponins in gotu kola beneficially affect collagen (the material that makes up connective tissue) to inhibit its production in hyperactive scar tissue following burns or wounds.

Holistic approaches that may be helpful

Acupuncture may be useful in the treatment of serious burns. A report of patients suffering from extensive second-degree burns suggests acupuncture can reduce shock and pain following the acute injury and may reduce infection and pain when used as a part of post-injury wound care. A preliminary report described ten patients with second-degree burns that did not respond to conventional medical treatment. A majority of these patients achieved greater than 90% recovery following electrical stimulation to the wound (similar to electro acupuncture). Ear (auricular) acupuncture with electrical stimulation was studied in a small controlled trial, in which a significantly greater reduction in pain from burns was achieved with acupuncture. The relief lasted at least 60 minutes following acupuncture treatment.

Cancer Prevention and Diet

Cancer refers to a large number of diseases categorized by unregulated replication of cells.

The contents of this article are limited to information about diet and to a discussion of cancer prevention—not treatment. Prevention of cancer in a person who has never had cancer is called "primary" prevention. Primary prevention is the focus of this article.

This article includes a discussion of studies that have assessed whether certain dietary ingredients may be beneficial in connection with the reduction of risk of developing cancer.

This information is provided solely to aid consumers in discussing supplements with their healthcare providers. It is not advised nor is this information intended to advocate, promote, or encourage self-use of this information for cancer risk reduction. Some studies suggest an association between high blood or dietary levels of a particular dietary ingredient with a reduced risk of developing cancer. Even if such an association were established, this does not mean that dietary supplements containing large amounts of the dietary ingredient will necessarily have a cancer risk reduction effect.
Prevention of a recurrence in a cancer patient who is in remission is called “secondary” prevention. Whether the information in this article would be helpful to people interested in secondary prevention is, for the most part, unknown. However, of cancer patients who are in complete remission, the information presented here is unlikely to help people who were ever diagnosed with metastatic cancer (also known as stage IV, or advanced, cancer).

Cancer is the second leading cause of death in Americans. Information on the prevention of breast, colon, lung, and prostate cancers is not provided in this article. To find out more about these specific forms of cancer, read the Breast Cancer, Colon Cancer, Lung Cancer, and Prostate Cancer articles.

Dietary changes that may be helpful

The following dietary changes have been studied in connection with cancer.

Alcohol and Cancer

Alcohol consumption significantly increases the risk of cancers of the mouth (oral/oropharyngeal cancer), throat (esophageal cancer), and voice box (laryngeal cancer), particularly in conjunction with cigarette smoking. Most studies documenting these associations also report that former drinkers have significantly lower risks for these cancers compared with current drinkers. Strong correlations between alcohol consumption and the risk of having liver cancer have also been reported.
Little is known about the effect of alcohol intake on the risk of female cancers other than breast cancer. Of the few published studies, findings have been inconsistent.

Fibre

Whole grains (such as rye, brown rice, and whole wheat) contain high amounts of insoluble fibre—the type of some scientists believe may help protect against a variety of cancers. In an analysis of the data from many studies, people who eat relatively high amounts of whole grains were reported to have low risks of lymphomas and cancers of the pancreas, stomach, colon, rectum, breast, uterus, mouth, throat, liver, and thyroid. Most research focusing on the relationship between cancer and fibre has focused on breast and colon cancers.

Consuming a diet high in insoluble fibre is best achieved by switching from white rice to brown rice and from bakery goods made with white flour or mixed flours to 100% whole wheat bread, whole rye crackers, and whole grain pancake mixes. Refined white flour is generally listed on food packaging labels as “flour,” enriched flour,” unbleached flour,”

durum wheat," semolina," or "white flour." Breads containing only whole wheat are often labelled "100% whole wheat."

Vegetarianism

The following two possibilities are both strongly supported by research findings:

- ☑ Some foods consumed by vegetarians may protect against cancer.
- ☑ Eating meat may increase the risk of cancer.

Compared with meat eaters, most, but not all, studies have found that vegetarians are less likely to be diagnosed with cancer. Vegetarians have also been shown to have stronger immune function, possibly explaining why vegetarians may be partially protected against cancer. Female vegetarians have been reported to have lower oestrogen levels compared with meat-eating women, possibly explaining a lower incidence of uterine and breast cancers. A reduced risk for various cancers is only partly, not totally, explained by differences in body weight, smoking habits, and other lifestyle issues.

Fruits and Vegetables

Consumption of fruits and vegetables is widely accepted as lowering the risk of most common cancers. Many doctors recommend that people wishing to reduce their risk of cancer eat several pieces of fruit and several portions of vegetables every day. Optimal intakes remain unknown.

Most doctors also recommend that people should not consider supplements as substitutes for the real thing. Some of the anticancer substances found in produce have probably not yet been discovered, while others are not yet available in supplement form. More important, some research, particularly regarding synthetic beta-carotene, does not support the idea that taking supplements has the same protective value against cancer as doe's consumption of fruits and vegetables.

Flavonoids

Flavonoids are found in virtually all herbs and plant foods. Consumption of flavonoid-rich onions and apples contain large amounts of one flavonoid called quercetin. Consumption of flavonoids in general, or quercetin-containing foods in particular, has been associated with protection against cancer in some, but not all, preliminary studies.

Tomatoes

Tomatoes contain lycopene—an antioxidant similar in structure to beta-carotene. Most lycopene in our diet comes from tomatoes, though traces of lycopene exist in other foods. Lycopene inhibits the proliferation of cancer cells in test tube research.

A review of published research found that higher intake of tomatoes or higher blood levels of lycopene correlated with protection from cancer in 57 of 72 studies. Findings in 35 of these studies were statistically significant. Evidence of a protective effect for tomato consumption was strongest for cancers of the prostate, lung, and stomach, but some evidence of a protective effect also appeared for cancers of the pancreas, colon, rectum, oesophagus (throat), mouth, breast, and cervix.

Cruciferous vegetables

Cabbage, Brussels sprouts, broccoli, and cauliflower belong to the Brassica family of vegetables, also known as "cruciferous" vegetables. In test tube and animal studies, these foods have been associated with anticancer activity, possibly due to several substances found in these foods, such as indole-3-carbinol, glucaric acid (calcium D-glucarate), and sulforaphane. In a preliminary human study, people who ate cruciferous vegetables were reported to have a lower-than-average risk for bladder cancer.

Meat (how it is cooked) and childhood cancers

In one report, high consumption of hot dogs was associated with an almost tenfold increase in the risk of childhood leukaemia when compared with low consumption. In another report, maternal consumption of hot dogs and childhood consumption of hamburgers or hot dogs at least once per week were associated with a doubling of the risk of cancers in children. A review of nine studies found an association between consumption by pregnant women of cured meat and the risk of brain cancer in their offspring. These associations do not yet constitute proof that eating hot dogs or hamburgers causes cancer in children, and evidence linking cured meat consumption to childhood cancers remains somewhat inconsistent.

In the report studying the effects of eating hot dogs and hamburgers, the association between meat eating and leukaemia was weakest among children who took vitamin supplements. Processed meats, such as hot dogs, contain nitrates and nitrites—precursors to carcinogens. Antioxidants found in multivitamins keep nitrates and nitrites from converting into those carcinogens. Therefore, the association between vitamin consumption in children and protection against childhood cancers remains plausible, though unproven.

Fish

Fish eaters have been reported to have low risks of cancers of the mouth, throat, stomach, colon, rectum, pancreas, lung, breast, and prostate. The omega-3 fatty acids found in fish are thought by some researchers to be the components of fish responsible for protection against cancer.

Coffee

Years ago, researchers reported the greater the consumption of coffee in a country, the higher the risk of pancreatic cancer in that country. An analysis of data from studies published between 1981 and 1993 did find some association between high consumption of coffee and an increased risk of pancreatic cancer. Surprisingly, however, the same report found that people drinking only one or two cups of coffee per day had, on average, a lower risk of pancreatic cancer compared with people who never drink coffee. Most, but not all, published reports have shown coffee drinkers are at increased risk of bladder cancer, though in one case the relationship was found only in men. In another study, the association was found only with caffeinated coffee. A review of 35 trials found a small (7%) increased risk of bladder cancer in coffee drinkers compared with people not drinking coffee—a difference not statistically significant.

Calories

Scientists have known for many years that severe restriction of calories dramatically reduces the risk of cancer in laboratory animals. Scientists speculate that caloric content of the human diet may also affect cancer rates, though much less is known about the effect, if any, of moderate caloric restrictions in humans. In one report, adults with cancer

were more likely to have consumed more calories during childhood compared with healthy adults. In other reports, attempts to find associations between reduced intake of calories and cancer have produced mixed results.

Only severe restriction in caloric intake provides significant protection in animal studies. As most people are unlikely to severely restrict calories, the association between caloric restriction and protection from cancer may ultimately prove to only be of academic interest.

Dietary Fat

In studying data from country to country, incidence of ovarian cancer correlates with dietary fat intake. According to preliminary research, consumption of saturated fat, dietary cholesterol (as found in eggs), and animal fat in general correlates with the risk of ovarian cancer. Preliminary studies suggest dietary fat may correlate with the risk of uterine cancer. Some of the excess risk appears to result from increased body weight that results from a high-fat diet.

Many years ago, researchers reported that animals on a high-fat diet formed skin cancers more rapidly than did other animals. Although some preliminary human research has found no relationship between dietary fat intake and the risk of skin cancer, patients with basal cell and squamous cell skin cancers who were put on a low-fat diet for two years were reported to show a significant decrease in the number of new skin cancers compared with patients who maintained a high-fat diet. Similarly, precancerous lesions of the skin have been prevented in people put on a low-fat diet.

Polyunsaturated Fats

A chain of carbon atoms in which several are not attached to the maximum possible amount of hydrogen is called “polyunsaturated”—in other words, unsaturated with hydrogen in several places. When nutrition researchers talk about polyunsaturated fatty acids, they are often referring primarily to linoleic acid—a fatty acid found in nuts and seeds and most vegetable oils.

In animal research, the consumption of polyunsaturated fatty acids increases the risk of some cancers. However, in humans, most, though not all, reports do not find an association between polyunsaturates and cancer risks.

Sugar

A preliminary study has reported an association between an increasing intake of sugar or sugar-containing foods and an increased risk of gallbladder cancer. Whether this association exists because sugar directly promotes cancer or because sugar consumption is only a marker for some other dietary or lifestyle factor remains unknown.

Salt

In preliminary research, increasing intake of salt correlates with increased risk of stomach cancer. Associations between foods preserved with salt and the risk of cancers of the head and neck have also been reported.

Animal studies suggest that the antioxidant or immune-enhancing effect of whey protein may produce anti-cancer effects. Preliminary human case reports suggest that 30 grams per day of whey protein may improve responses to anti-cancer medications, but more research is needed.

Childhood Diseases

Some of the most common illnesses of childhood cause skin eruptions and are known as exanthems. The childhood exanthems include rubeola (measles), rubella (German measles), chicken pox, erythema infectiosum (fifth disease), and roseola infantum, all of which are viral infections, as well as scarlet fever, a bacterial infection. All of these infections affect the respiratory system and are highly contagious.

Children with these illnesses usually recover fully even without treatment; however, all of these conditions carry the possibility of severe complications, such as pneumonia, heart and kidney damage, and encephalitis (inflammation of the brain). Vaccinations and other changes in modern lifestyle have rendered several of these previously common illnesses virtually nonexistent in the developed world, though they are widespread and remain a major cause of childhood deaths in other parts of the world.

What are the symptoms of childhood diseases?

Children with a childhood disease may have symptoms including muscle aches, fatigue, fever, coughing, sneezing, sore throat, runny nose, nausea, and vomiting. There may also be an itchy skin rash with red bumps that may look like blisters.

Dietary changes that may be helpful

Children who suffer from malnutrition have weakened immune systems and are more likely to acquire exanthemous infections and to experience more severe illness from them. Malnutrition contributes to half of all childhood deaths from infectious diseases worldwide. Measles, a common childhood viral infection, is more likely to result in permanent blindness and is more likely to be fatal in children with poor nutritional status. Measles vaccinations are less effective in children who are malnourished.

Nutritional supplements that may be helpful

Preliminary research shows that supplemental vitamin A improves the likelihood that the measles vaccine will provide protection. Vitamin A has, since the 1920s, been the subject of much research into the prevention and treatment of childhood exanthems, particularly measles. This nutrient has a critical role in proper immune function, and there is evidence that supplementation with vitamin A reduces the incidence and severity of, and deaths from, childhood measles. The World Health Organization (WHO) has therefore recommended that children with signs of deficiency receive supplementation with vitamin A. The recommended amounts are 100,000 IU for children younger than one year and 200,000 IU for children older than one year, immediately upon diagnosis, and repeated once the next day and once in one to four weeks. A controlled trial of African children given vitamin A supplementation according to the WHO's recommendations found that severity of measles and its long-term consequences were reduced by 82% on day eight, 61% in week six, and 85% six months after the onset.

Another controlled trial found that giving approximately 200,000 IU of vitamin A once during measles illness was not adequate to provide any benefit in African children whose vitamin A status was unknown. In a controlled prevention study, Indian children treated with 2,500 mcg (8,333 IU) of vitamin A weekly had fewer measles complications and less than half of the rate of death as compared with children receiving placebo; but in another study, Indian children receiving 200,000 IU of vitamin A every six months did not have a

different rate of total infectious illness nor rate of death as compared with children receiving placebo.

An analysis of 20 controlled trials concluded that vitamin A supplementation reduced deaths from measles respiratory infection by 70%. While vitamin A deficiency is widespread in developing countries, it has also been reported in the United States and has been linked with more severe cases of measles. The American Academy of Pediatrics has recommended supplementation with vitamin A for children between the ages of six months and two years who are hospitalized with measles and its complications. The recommended amount is a single administration of 100,000 IU for children aged 6 to 12 months and 200,000 IU for children older than 1 year, followed by a second administration 24 hours later and a third after four weeks in children who are likely to have vitamin A deficiency.

One trial showed that low levels of vitamin A are more prevalent in children with measles than in similar children without measles, with levels rising back to normal several days after the onset of the infection. This observation led the authors of the study to conclude that vitamin A deficiency is a consequence of infection with the measles virus and to recommend supplementation with vitamin A during measles infection even when prior deficiency is not suspected. Vitamin A stores have also been shown to be depleted during chicken pox infection, and some preliminary data supports its use in treatment of chicken pox. In a controlled trial, in which children without vitamin A deficiency were given either 200,000 IU of vitamin A or placebo one time during chicken pox, the children given vitamin A had shorter duration of illness and fewer severe complications. The researchers then treated the patients' siblings with vitamin A before chicken pox became evident, and they had an even shorter length of illness.

Selenium is a mineral known to have antioxidant properties and to be involved in healthy immune system activity. Recent animal and human research suggests that selenium deficiency increases the risk of viral infection and that supplementation prevents viral infection. In a controlled trial, children with a specific viral infection (respiratory syncytial virus) who received a single supplement of 1 mg (1,000 mcg) of sodium selenite (a form of selenium) recovered more quickly than children who did not receive selenium. While it is possible that childhood exanthemous viral infections might similarly be more severe in selenium-deficient children and helped through supplementation, none of the current research involves these specific viruses.

Zinc is another mineral antioxidant nutrient that the immune system requires. Zinc deficiency results in lowered immune defences, and zinc supplementation increases immune activity in people with certain illnesses. As with vitamin A, zinc levels have been observed to fall during the early stages of measles infection and to return to normal several days later. There is evidence that zinc supplements are helpful in specific viral infections but there are no data on the effect of zinc on childhood exanthemous infections.

Vitamin C has been demonstrated in test tube, animal, and human studies to have immune-enhancing and direct antiviral properties. Preliminary observations made on the effect of vitamin C on viral infections have involved both measles and chicken pox. An active immune system uses vitamin C rapidly, and blood levels fall in children with bacterial or viral infections. Reduced immune cell activity has been observed in people with measles, but in one preliminary study, supplementation with 250 mg daily of vitamin

C in children 18 months to 3 years old had no impact on the course of the illness. The authors of this study admit that this amount of vitamin C may have been too low to bring about an observable increase in immune cell activity and thus an increase in speed of recovery.

Healthy immune function also requires adequate amounts of vitamin E. Vitamin E deficiency is associated with increased severity of viral infections in mice. Supplementation with vitamin E during viral infections has been shown to increase immune cell activity and reduce virus activity in mice. Research into the effects of vitamin E supplementation on childhood exanthems has not been done.

Flavonoids are a group of compounds found in some plant foods and medicinal herbs. An antiviral action of some flavonoids has been observed in a number of test tube experiments. Quercetin, one of the flavonoids, has shown particularly strong antiviral properties in the test tube; however, one study did not find quercetin to be of benefit to mice with a viral infection. It is not known whether flavonoids can be absorbed in amounts sufficient to exert an antiviral effect in humans, and therefore their possible role in the treatment of childhood exanthems remains unknown.

High Cholesterol

Although it is by no means the only major risk factor, elevated serum (blood) cholesterol is clearly associated with a high risk of heart disease.

Most doctors suggest cholesterol levels should stay under 200 mg/dl. As levels fall below 200, the risk of heart disease continues to decline. Many doctors consider cholesterol levels of no more than 180 to be optimal. A low cholesterol level, however, is not a guarantee of good heart health, as some people with low levels do suffer heart attacks.

Medical laboratories now subdivide total cholesterol measurement into several components, including LDL (“bad”) cholesterol, which is directly linked to heart disease, and HDL (“good”) cholesterol, which is protective. The relative amount of HDL to LDL is more important than total cholesterol. For example, it is possible for someone with very high HDL to be at relatively low risk for heart disease even with total cholesterol above 200. Evaluation of changes in cholesterol requires consultation with a healthcare professional and should include measurement of total serum cholesterol, as well as HDL and LDL cholesterol.

The following discussion is limited to information about lowering serum cholesterol levels or increasing HDL cholesterol using natural approaches. Because high cholesterol is linked to atherosclerosis and heart disease, people concerned about heart disease should also learn more about atherosclerosis.

What are the symptoms of high cholesterol?

This condition does not produce symptoms. Therefore, it is prudent to visit a health professional on a regular basis to have cholesterol levels measured.

Dietary changes that may be helpful

Eating animal foods containing saturated fat is linked to high cholesterol levels and heart disease. Significant amounts of animal-based saturated fat are found in beef, pork, veal,

poultry (particularly in poultry skins and dark meat), cheese, butter, ice cream, and all other forms of dairy products not labelled “fat free.” Avoiding consumption of these foods reduces cholesterol and has been reported to reverse even existing heart disease.

Unlike other dairy foods, skimmed milk, non-fat yogurt, and non-fat cheese are essentially fat-free. Dairy products labelled “low fat” are not particularly low in fat. A full 25% of calories in 2% milk come from fat. (The “2%” refers to the fraction of volume filled by fat, not the more important percentage of calories coming from fat.)

In addition to large amounts of saturated fat from animal-based foods, Americans eat small amounts of saturated fat from coconut and palm oils. Palm oil has been reported to elevate cholesterol. Research regarding coconut oil is mixed, with some trials finding no link to heart disease, while other research reports that coconut oil elevates cholesterol levels.

Despite the links between saturated fat intake and serum cholesterol levels, not every person responds to appropriate dietary changes with a drop in cholesterol. A subgroup of people with elevated cholesterol who have what researchers call “large LDL particles” has been reported to have no response even to dramatic reductions in dietary fat. (LDL is the “bad” cholesterol most associated with an increased risk of heart disease.) This phenomenon is not understood. People who significantly reduce intake of animal fats for several months but do not see significant a reduction in cholesterol levels should discuss other approaches to lowering cholesterol with a doctor.

Yogurt, acidophilus milk, and kefir are fermented milk products that have been reported to lower cholesterol in most, but not all, double-blind and other controlled research. Until more is known, it makes sense for people with elevated cholesterol who consume these foods, to select non-fat varieties.

Eating fish has been reported to increase HDL cholesterol and is linked to a reduced risk of heart disease in most, but not all, studies. Fish contains very little saturated fat, and fish oil contains EPA and DHA, omega-3 fatty acids that appear to protect against heart disease.

Vegetarians have lower cholesterol and less heart disease than meat eaters, in part because they avoid animal fat. Vegans (people who eat no meat, dairy, or eggs) have the lowest cholesterol levels, and switching from a standard diet to a vegan diet, along with other lifestyle changes, has been reported to reverse heart disease in controlled research.

Dietary cholesterol

Most dietary cholesterol comes from egg yolks. Eating eggs has increased serum cholesterol in most studies. However, eating eggs does not increase serum cholesterol as much as eating foods high in saturated fat, and eating eggs may not increase serum cholesterol at all if the overall diet is low in fat.

Egg consumption does not appear to be totally safe, however, even for people consuming a low-fat diet. When cholesterol from eggs is cooked or exposed to air, it oxidizes. Oxidized cholesterol is linked to increased risk of heart disease. Eating eggs

also makes LDL cholesterol more susceptible to damage, a change linked to heart disease.

Whether or not egg eaters are more likely to die from heart disease is a matter of controversy. In one preliminary study, egg eaters had a higher death rate from heart disease, even when serum cholesterol levels were not elevated.[33] However, another preliminary study found no evidence of an overall significant association between egg consumption, and risk of heart disease or stroke, except in people with diabetes. Until more is known, limiting egg consumption may be a good idea, particularly for people with existing heart disease or diabetes.

While coconut oil is high in saturated fat, some evidence suggests it does not cause unhealthy changes in blood cholesterol levels compared with other saturated fats. In a controlled study of people with high cholesterol, coconut oil resulted in higher total and LDL cholesterol levels compared with safflower oil (a polyunsaturated oil), but lower levels compared with butter, while HDL levels were similar for all three diets.[35] Another controlled study compared coconut oil with canola oil, and found that coconut oil raised total and LDL cholesterol in people with high cholesterol who were not taking cholesterol-lowering drugs, but did not affect these levels in people who were taking these drugs. HDL levels were not reported in this study.

Fibre

Soluble fibre from beans, oats, psyllium seed, glucomannan, and fruit pectin has lowered cholesterol levels in most trials. Doctors often recommend that people with elevated cholesterol eat more of these high-soluble fibre foods. However, even grain fibre (which contains insoluble fibre and does not lower cholesterol) has been linked to protection against heart disease, though the reason for the protection remains unclear. It makes sense for people wishing to lower their cholesterol levels and reduce the risk of heart disease to consume more fibre of all types. Some trials have used 20 grams of additional fibre per day for several months to successfully lower cholesterol.

Oat bran is rich in a soluble fibre called beta-glucan. In 1997, the U.S. Food and Drug Administration passed a unique ruling that allowed oat bran to be registered as the first cholesterol-reducing food at an amount providing 3 grams of beta-glucan per day, although some evidence suggests this level may not be high enough to make a significant difference. Several double-blind and other controlled trials have shown that oat bran and oat milk supplementation may significantly lower cholesterol levels in people with elevated cholesterol, but only weakly lowers them in people with healthy cholesterol levels.

Flaxseed, another good source of soluble fibre, has been reported to lower total and LDL cholesterol in preliminary studies. A double-blind trial found that while both flaxseed and sunflower seed lowered total cholesterol, only flaxseed significantly lowered LDL. Amounts of flaxseed used in these trials typically range from 30–50 grams per day. A controlled trial found that partially defatted flaxseed, containing 20 grams of fibre per day, significantly lowered LDL cholesterol, suggesting that at least one of the cholesterol-lowering components in flaxseed is likely to be the fibre in this product, as opposed to the oil removed from it. Controlled trials of flaxseed oil alone have shown inconsistent effects on blood cholesterol.

Alpha-linolenic acid

Doctors and researchers are interested in alpha-linolenic acid (ALA)—the special omega-3 fatty acid found in large amounts in flaxseeds and flaxseed oil. ALA is a precursor to EPA, a fatty acid from fish oil that is believed to protect against heart disease. To a limited extent, ALA converts to EPA within the body. However, unlike EPA, ALA does not lower triglyceride levels (a risk factor for heart disease).

Preliminary research on the effects of ALA from flaxseed has produced conflicting results. For example, ALA has improved parameters of arterial health that should protect people from heart disease, yet ALA may cause damage to LDL cholesterol. Such damage is believed to be a precursor to heart disease.

In 1994, researchers conducted a study in people with a history of heart disease, using what they called the "Mediterranean" diet. The diet was significantly different from what people from Mediterranean countries actually eat, in that it contained little olive oil. Instead, the diet included a special margarine high in ALA. Those people assigned to the "Mediterranean" diet had a remarkable 70% reduced risk of dying from heart disease compared with the control group during the first 27 months. Similar results were also confirmed after almost four years. Although cholesterol levels fell only modestly in the "Mediterranean" diet group, the positive results suggest that people with elevated cholesterol attempting to reduce the risk of heart disease should consider such a diet. The diet was high in beans and peas, fish, fruit, vegetables, bread, and cereals; and low in meat, dairy fat, and eggs. Although the authors believe that the high ALA content of the diet was partially responsible for the surprising outcome, other aspects of the diet may have been partly or even totally responsible for decreased death rates. Therefore, the success of the "Mediterranean" diet does not prove that ALA protects against heart disease.

Soy

Tofu, tempeh, miso, and some protein powders in health food stores, are derived from soybeans. In 1995, an analysis of many trials proved that soy reduces both total and LDL cholesterol. Since then, other double-blind and other controlled trials have confirmed these findings. Trials showing statistically significant reductions in cholesterol have generally used more than 30 grams per day of soy protein. However, if soy replaces animal protein in the diet, as little as 20 grams per day has been shown to significantly reduce both total and LDL cholesterol.[69] Isoflavones found in soy beans appear to be key cholesterol-lowering ingredients of the bean, but animal research suggests other components of soy are also important.

Sugar

Eating sugar has been reported to reduce protective HDL cholesterol and increases other risk factors linked to heart disease. However, higher sugar intake has been associated with only slightly higher risks of heart disease in most reports. Although the exact relationship between sugar and heart disease remains somewhat unclear, many doctors recommend that people with high cholesterol reduce their sugar intake.

Coffee

Drinking boiled or French press coffee increases cholesterol levels. Modern paper coffee filters trap the offending chemicals and keep them from entering the cup. Therefore, drinking paper-filtered coffee does not increase cholesterol levels. Espresso coffee has amounts of the offending chemicals midway between those of other unfiltered coffees

and paper-filtered coffee, but there is little research investigating the effect of espresso on cholesterol levels, and studies to date have produced conflicting results. The effects of decaffeinated coffee on cholesterol levels remain in debate.

Alcohol

Moderate drinking (one to two drinks per day) increases protective HDL cholesterol. This effect happens equally with different kinds of alcohol-containing beverages. Alcohol also acts as a blood thinner, an effect that should lower heart disease. However, alcohol consumption may cause liver disease (e.g., cirrhosis), cancer, high blood pressure, alcoholism, and, at high intake, an increased risk of heart disease. As a result, some doctors never recommend alcohol, even for people with high cholesterol. Nevertheless, those who have one to two drinks per day appear to live longer and are clearly less likely to have heart disease.[89] Therefore, some people at very high risk of heart disease—those who are not alcoholics, who have healthy livers and normal blood pressure, and who are not at high risk for cancer, particularly breast cancer—are likely to receive more benefit than harm, from light drinking.

Olive oil

Olive oil lowers LDL cholesterol, especially when the olive oil replaces saturated fat in the diet. People from countries that use significant amounts of olive oil appear to be at low risk for heart disease. A double-blind trial showed that a diet high in monounsaturated fatty acids from olive oil, lowers cardiovascular disease risk by 25%, as compared with a 12% decrease from a low-fat (25% fat) diet. The trial also found that low-fat diets decrease HDL cholesterol by 4%, which is undesirable, since HDL cholesterol is protective against heart disease. Diets high in monounsaturated fatty acids from olive oil do not adversely affect HDL levels. Although olive oil is clearly safe for people with elevated cholesterol, it is, like any fat or oil, high in calories, so people who are overweight should limit its use.

Trans fatty acids and margarine

Trans fatty acids (TFAs) are found in many processed foods containing partially hydrogenated oils. The highest levels occur in margarine. Margarine consumption is linked to increased risk of unfavourable changes in cholesterol levels and heart disease. Margarine and other processed foods containing partially hydrogenated oils should be avoided.

However, special therapeutic margarines are now available that contain substances, called phytostanols, that block the absorption of cholesterol. The FDA has approved some of these margarines as legitimate therapeutic agents for lowering blood cholesterol levels. The best-known of these products is Benecol™. The cholesterol-lowering effect of these margarines has been demonstrated in numerous double-blind and other controlled trials.

Garlic

Garlic is available as a food, as a spice in powder form, and as a supplement. Eating garlic has helped to lower cholesterol in some research, though several double-blind trials have not found garlic supplements to be thusly effective. Although some of the negative reports have been criticized, the relationship between garlic and cholesterol lowering remains unproven. However, garlic is known to act as a blood thinner and may reduce other risk factors for heart disease. For these reasons, some doctors recommend

eating garlic as food, taking 900 mg of garlic powder from capsules, or using a tincture of 2 to 4 ml, taken three times daily.

Nuts

Preliminary research consistently shows that people who eat nuts frequently have a dramatically reduced risk of heart disease. This apparent beneficial effect is at least partially explained by preliminary and controlled research demonstrating that nut consumption lowers cholesterol levels. Of nuts commonly consumed, almonds and walnuts may be most effective at lowering cholesterol. Macadamia nuts have been less beneficial in most studies, although one controlled trial found a cholesterol-lowering effect from macadamia nuts. Hazelnuts and pistachio nuts have also been reported to help lower cholesterol.

Nuts contain many factors that could be responsible for protection against heart disease, including fibre, vitamin E, alpha-linolenic acid (found primarily in walnuts), oleic acid, magnesium, potassium, and arginine. Therefore, exactly how nuts lower cholesterol or lower the risk of heart disease remains somewhat unclear. Some doctors even believe that nuts may not be directly protective; rather, people busy eating nuts will not simultaneously be eating eggs, dairy, or trans fatty acids from margarine and processed food, the avoidance of which would reduce cholesterol levels and the risk of heart disease. Nonetheless, the remarkable consistency of research outcomes strongly suggests that nuts do help protect against heart disease. Although nuts are loaded with calories, a preliminary trial surprisingly reported that adding hundreds of calories per day from nuts for six months did not increase body weight in humans —an outcome supported by other reports. Even when increasing nut consumption has led to weight gain, the amount of added weight has been remarkably less than would be expected, given the number of calories added to the diet. Given the number of calories per ounce of nuts, scientists do not understand why moderate nut consumption apparently has so little effect on body weight.

Number and size of meals

When people eat a number of small meals, serum cholesterol levels fall compared with the effect of eating the same food in three big meals. People with elevated cholesterol levels should probably avoid very large meals and eat more frequent, smaller meals.

Lifestyle changes that may be helpful

Exercise increases protective HDL cholesterol, an effect that occurs even from walking. Total and LDL cholesterol are typically lowered by exercise, especially when weight-loss also occurs. Exercisers have a relatively low risk of heart disease. However, people over 40 years of age, or who have heart disease, should talk with their doctor before starting an exercise program; overdoing it may actually trigger heart attacks.

Obesity increases the risk of heart disease, in part because weight gain lowers HDL cholesterol. Weight loss reduces the body's ability to make cholesterol, increases HDL levels, and reduces triglycerides (another risk factor for heart disease). Weight loss also leads to a decrease in blood pressure.

Smoking is linked to a lowered level of HDL cholesterol and is also known to cause heart disease. Quitting smoking reduces the risk of having a heart attack.

The combination of feelings of hostility, stress, and time urgency is called type A behaviour. Men, but not women, with these traits are at high risk for heart disease in

most, but not all, studies. Stress or type A behaviour may elevate cholesterol in men. Reducing stress and feelings of hostility has reduced the risk of heart disease.

Nutritional supplements that may be helpful

Glucomannan is a water-soluble dietary fibre that is derived from konjac root. Controlled and double-blind trials have shown that supplementation with glucomannan significantly reduced total blood cholesterol, LDL cholesterol, and triglycerides, and in some cases raised HDL cholesterol. Effective amounts of glucomannan for lowering blood cholesterol have been 4 to 13 grams per day.

Test tube and animal studies indicate that policosanol is capable of inhibiting cholesterol production by the liver.

Extensive preliminary and double-blind research in Cuba and other countries in Latin America has demonstrated that taking 10 to 20 mg per day of policosanol extracted from sugar cane results in significant changes in blood cholesterol levels, including total cholesterol (17 to 21% lower on average), LDL cholesterol (21 to 29% lower), and HDL cholesterol (7 to 29% higher).

The combined results of nine double-blind trials indicate that supplementation with beta-hydroxy-beta-methylbutyrate (HMB) effectively lowers total and LDL cholesterol. All trials used 3 grams per day, taken for three to eight weeks.

Vitamin C appears to protect LDL cholesterol from damage. In some clinical trials, cholesterol levels have fallen when people with elevated cholesterol supplement with vitamin C. Some studies report that decreases in total cholesterol occur specifically in LDL cholesterol. Doctors sometimes recommend 1 gram per day of vitamin C. A review of the disparate research concerning vitamin C and heart disease, however, has suggested that most protection against heart disease from vitamin C, is likely to occur with as little as 100 mg per day.

Pantethine, a by-product of vitamin B5 (pantothenic acid), may help reduce the amount of cholesterol made by the body. Several preliminary and two controlled trials have found that pantethine (300 mg taken two to four times per day) significantly lowers serum cholesterol levels and may also increase HDL. However, one double-blind trial in people whose high blood cholesterol did not change with diet and drug therapy, found that pantethine was also not effective. Common pantothenic acid has not been reported to have any effect on high blood cholesterol.

Chromium supplementation has reduced total cholesterol, LDL cholesterol and increased HDL cholesterol in double-blind and other controlled trials, although other trials have not found these effects. One double-blind trial found that high amounts of chromium (500 mcg per day) in combination with daily exercise was highly effective, producing nearly a 20% decrease in total cholesterol levels in just 13 weeks.

Brewer's yeast, which contains readily absorbable and biologically active chromium, has also lowered serum cholesterol. People with higher blood levels of chromium appear to be at lower risk for heart disease. A reasonable and safe intake of supplemental chromium is 200 mcg per day. People wishing to use brewer's yeast as a source of chromium should look for products specifically labelled "from the brewing process" or "brewer's yeast," since most yeast found in health food stores is not brewer's yeast, and

does not contain chromium. Optimally, true brewer's yeast contains up to 60 mcg of chromium per tablespoon, and a reasonable intake is 2 tablespoons per day.

High amounts (several grams per day) of niacin, a form of vitamin B3, lower cholesterol, an effect recognized in the approval of niacin as a prescription medication for high cholesterol. The other common form of vitamin B3—niacinamide—does not affect cholesterol levels. Some niacin preparations have raised HDL cholesterol better than certain prescription drugs. Some cardiologists prescribe 3 grams of niacin per day or even higher amounts for people with high cholesterol levels. At such intakes, acute symptoms (flushing, headache, stomach ache) and chronic symptoms (liver damage, diabetes, gastritis, eye damage, possibly gout) of toxicity may be severe. Many people are not able to continue taking these levels of niacin due to discomfort or danger to their health. Therefore, high intakes of niacin must only be taken under the supervision of a doctor.

Symptoms caused by niacin supplements, such as flushing, have been reduced with sustained-release (also called "time-release") niacin products. However, sustained-release forms of niacin have caused significant liver toxicity and, though rarely, liver failure. One partial time-release (intermediate-release) niacin product has lowered LDL cholesterol and raised HDL cholesterol without flushing, and it also has acted without the liver function abnormalities typically associated with sustained-release niacin formulations. However, this form of niacin is available by prescription only.

In an attempt to avoid the side effects of niacin, alternative health practitioners increasingly use inositol hexaniacinate, recommending 500 to 1,000 mg, taken three times per day, instead of niacin. This special form of niacin has been reported to lower serum cholesterol but so far has not been found to cause significant toxicity. Unfortunately, compared with niacin, far fewer investigations have studied the possible positive or negative effects of inositol hexaniacinate. As a result, people using inositol hexaniacinate should not take it without the supervision of a doctor, who will evaluate whether it is helpful (by measuring cholesterol levels) and will make sure that toxicity is not occurring (by measuring liver enzymes, uric acid and glucose levels, and by taking medical history and doing physical examinations).

Soy supplementation has been shown to lower cholesterol in humans. Soy is available in foods such as tofu, miso, and tempeh and as a supplemental protein powder. Soy contains isoflavones, naturally occurring plant components that are believed to be soy's main cholesterol-lowering ingredients. A controlled trial showed that soy preparations containing high amounts of isoflavones effectively lowered total cholesterol and LDL ("bad") cholesterol, whereas low-isoflavone preparations (less than 27 mg per day) did not. However, supplementation with either soy or non-soy isoflavones (from red clover) in pill form failed to reduce cholesterol levels in a group of healthy volunteers, suggesting that isoflavone may not be responsible for the cholesterol-lowering effects of soy. Further trials of isoflavone supplements in people with elevated cholesterol, are needed to resolve these conflicting results.

Soy contains phytosterols. One such molecule, beta-sitosterol, is available as a supplement. Beta-sitosterol alone, and in combination with similar plant sterols, has been shown to reduce blood levels of cholesterol in preliminary and controlled trials. This effect may occur because beta-sitosterol blocks absorption of cholesterol. In studying the effects of 0.8, 1.6, and 3.2 grams of plant sterols per day, one double-blind trial found

that higher intake of sterols tended to result in greater reduction in cholesterol, though the differences between the effects of these three amounts were not statistically significant.

A synthetic molecule related to beta-sitosterol, sitostanol, is now available in a special margarine and has also been shown to lower cholesterol levels. In one controlled trial, supplementation with 1.7 grams per day of a plant-sterol product containing mostly sitostanol, combined with dietary changes, led to a dramatic 24% drop in LDL ("bad") cholesterol compared with only a 9% decrease in the diet-only part of the trial. Other controlled and double-blind trials have confirmed these results. A review of double-blind trials on sitostanol found that a reduction in the risk of heart disease of about 25% may be expected from use of sitostanol-containing spreads, a larger clinical effect than that produced by people reducing their saturated fat intake.

Tocotrienols, a group of food-derived compounds that resemble vitamin E, may lower blood levels of cholesterol, but evidence is conflicting. Although tocotrienols inhibited cholesterol synthesis in test-tube studies, human trials have produced contradictory results. Two double-blind trials found that 200 mg per day of either gamma-tocotrienol or total tocotrienols were more effective than placebo, reducing cholesterol levels by 13–15%. However, in another double-blind trial, 200 mg of tocotrienols per day failed to lower cholesterol levels, and a fourth double-blind trial found 140 mg of tocotrienols and 80 mg of vitamin E (d-alpha-tocopherol) daily resulted in no changes in total cholesterol, LDL cholesterol, or HDL cholesterol levels.

Deficiency of the trace mineral, copper, has been linked to high blood cholesterol. In a controlled trial, daily supplementation with 3 to 4 mg of copper for eight weeks decreased blood levels of total cholesterol and LDL cholesterol, in a group of people over 50 years of age.

Beta-glucan is a type of soluble fibre molecule derived from the cell wall of baker's yeast, oats and barley, and many medicinal mushrooms, such as maitake. Beta-glucan is the key factor for the cholesterol-lowering effect of oat bran. As with other soluble-fibre components, the binding of cholesterol (and bile acids) by beta-glucan and the resulting elimination of these substances in the faeces is very helpful for reducing blood cholesterol. Results from a number of double-blind trials with either oat- or yeast-derived beta-glucan indicate typical reductions, after at least four weeks of use, of approximately 10% for total cholesterol and 8% for LDL ("bad") cholesterol, with elevations in HDL ("good") cholesterol ranging from zero to 16%.For lowering cholesterol levels, the amount of beta-glucan used has ranged from 2,900 to 15,000 mg per day.

Some preliminary and double-blind trials have shown that supplemental calcium reduces cholesterol levels. Possibly the calcium is binding with and preventing the absorption of dietary fat. However, other research has found no substantial or statistically significant effects of calcium supplementation on total cholesterol or HDL ("good") cholesterol. Reasonable supplemental levels are 800 to 1,000 mg per day.

In one double-blind trial, vitamin E increased protective HDL cholesterol, but several other trials, found no effect of vitamin E. However, vitamin E is known to protect LDL cholesterol from damage. Most cardiologists believe that only damaged LDL increases the risk of heart disease. Studies of the ability of vitamin E supplements to prevent heart disease have produced conflicting results, but many doctors continue to recommend that

everyone supplement 400 IU of vitamin E per day to lessen the risk of having a heart attack.

L-carnitine is needed by heart muscle to utilize fat for energy. Some, but not all, preliminary trials report that carnitine reduces serum cholesterol. HDL cholesterol has also increased in response to carnitine supplementation. People have been reported in controlled research to stand a greater chance of surviving a heart attack if they are given L-carnitine supplements. Most trials have used 1 to 4 grams of carnitine per day.

Magnesium is needed by the heart to function properly. Although the mechanism is unclear, magnesium supplements (430 mg per day) lowered cholesterol in a preliminary trial. Another preliminary study reported that magnesium deficiency is associated with a low HDL cholesterol level. Intravenous magnesium has reduced death following heart attacks in some, but not all, clinical trials. Though these outcomes would suggest that people with high cholesterol levels should take magnesium supplements, an isolated double-blind trial reported that people with a history of heart disease assigned to magnesium supplementation experienced an increased number of heart attacks. More information is necessary before the scientific community can clearly evaluate the role magnesium should play for people with elevated cholesterol.

Chondroitin sulphate has lowered serum cholesterol levels in preliminary trials. Years ago, this supplement dramatically reduced the risk of heart attacks in a controlled, six-year follow-up of people with heart disease. The few doctors aware of these older clinical trials sometimes tell people with a history of heart disease or elevated cholesterol levels, to take approximately 500 mg of chondroitin sulphate three times per day.

Although lecithin has been reported to increase HDL cholesterol and lower LDL cholesterol, a review of the research found that the positive effect of lecithin was likely due to the polyunsaturated fat content of the lecithin. If this is so, it would make more sense to use inexpensive vegetable oil, rather than take lecithin supplements. However, an animal study found a cholesterol-lowering effect of lecithin independent of its polyunsaturate content. A double-blind trial found that 20 grams of soy lecithin per day for four weeks had no significant effect on total cholesterol, LDL cholesterol, HDL cholesterol, or triglycerides. Whether taking lecithin supplements is a useful way to lower cholesterol in people with elevated cholesterol levels remains unclear.

The fibre-like supplement chitosan may lower blood cholesterol. A preliminary trial reported that 3 to 6 grams per day of chitosan taken for two weeks resulted in a 6% drop in cholesterol and a 10% increase in protective HDL cholesterol. However, a double-blind trial found a smaller 2.4 gram daily dose did not produce significant beneficial changes in total, LDL, or HDL cholesterol. Royal jelly has prevented the cholesterol-elevating effect of nicotine and has lowered serum cholesterol in animal studies. Preliminary human trials have also found that royal jelly may lower cholesterol levels. An analysis of cholesterol-lowering trials shows that 50 to 100 mg per day is the typical amount used in such research.

A double-blind trial found that 20 grams per day of creatine taken for five days, followed by ten grams per day for 51 days, significantly lowered serum total cholesterol and triglycerides, but did not change either LDL or HDL cholesterol, in both men and women. However, another double-blind trial found no change in any of these blood levels in trained athletes using creatine during a 12-week strength training program. Creatine

supplementation in this negative trial was lower—only 5 grams per day were taken for the last 11 weeks of the study.

Octacosanol, a substance found in wheat germ oil, is sometimes available as a supplement. Small amounts (5 to 20 mg per day) of policosanol, an experimental supplement from Cuba consisting primarily of octacosanol, has led to large reductions in LDL cholesterol and/or increases in HDL. Octacosanol may lower cholesterol by inhibiting the liver's production of cholesterol. Homocysteine, a substance linked to heart disease risk, may increase the rate at which LDL cholesterol is damaged. While vitamin B6, vitamin B12, and folic acid lower homocysteine, a recent trial found no effect of supplements of these vitamins on protecting LDL cholesterol, even though homocysteine was lowered.

Herbs that may be helpful

Researchers have determined that one of the ingredients in red yeast rice, called monacolin K, inhibits the production of cholesterol by stopping the action of the key enzyme in the liver (i.e., HMG-CoA reductase) that is responsible for manufacturing cholesterol. The drug lovastatin (Mevacor®) acts in a fashion similar to this red-yeast-rice ingredient. However, the amount per volume of monacolin K in red yeast rice is small (0.2% per 5 mg) when compared to the 20 to 40 mg of lovastatin available as a prescription drug.

The red yeast rice used in various studies was a proprietary product called Cholestin®, which contains ten different monacolins. The sale of Cholestin has been banned in the United States, as a result of a lawsuit alleging patent infringement. Other red yeast rice products currently on the market differ from Cholestin in their chemical makeup. None contain the full complement of 10 monacolin compounds that are present in Cholestin, and some contain a potentially toxic fermentation product called citrinin. Until further information is available, red yeast rice products other than Cholestin cannot be recommended.

Use of psyllium has been extensively studied as a way to reduce cholesterol levels. An analysis of all double-blind trials in 1997 concluded that a daily amount of 10 grams psyllium lowered cholesterol levels by 5% and LDL cholesterol by 9%. Since then, a large controlled trial found that use of 5.1 grams of psyllium two times per day significantly reduced serum cholesterol as well as LDL-cholesterol. Generally, 5 to 10 grams of psyllium are added to the diet per day to lower cholesterol levels. The combination of psyllium and oat bran may also be effective at lowering LDL cholesterol.
Guggul, a mixture of substances taken from a plant, is an approved treatment for elevated cholesterol in India and has been a mainstay of the Ayurvedic approach to preventing atherosclerosis. One double-blind trial studying the effects of guggul reported that serum cholesterol dropped by 17.5%. In another double-blind trial comparing guggul to the drug clofibrate, the average fall in serum cholesterol was slightly greater in the guggul group; moreover, HDL cholesterol rose in 60% of people responding to guggul, while clofibrate did not elevate HDL. A third double-blind trial found significant changes in total and LDL cholesterol levels, but not in HDL. However, in another double-blind trial, supplementation with guggul for eight weeks had no effect on total serum cholesterol, but significantly increased LDL-cholesterol levels, compared with a placebo. Daily intakes of guggul are based on the amount of guggulsterones in the extract. The recommended amount of guggulsterones is 25 mg taken three times per day. Most

extracts contain 5 to 10% guggulsterones, and doctors familiar with their use usually recommend taking guggul for at least 12 weeks before evaluating its effect.

In a double-blind trial, people with moderately high cholesterol took a tincture of Achillea wilhelmsii, an herb used in traditional Persian medicine. Participants in the trial used 15 to 20 drops of the tincture twice daily for six months. At the end of the trial, participants experienced significant reductions in total cholesterol, LDL cholesterol and triglycerides, as well as an increase in HDL cholesterol compared to those who took placebo. No adverse effects were reported.

Reports on many double-blind garlic trials performed through 1998 suggested that cholesterol was lowered by an average of 9 to 12% and triglycerides by 8 to 27% over a one-to-four month period. Most of these trials used 600 to 900 mg per day of garlic supplements. More recently, however, several double-blind trials have found garlic to have minimal success in lowering cholesterol and triglycerides. One negative trial has been criticized for using a steam-distilled garlic “oil” that has no track record for this purpose, while the others used the same standardized garlic products as the previous positive trials. Based on these findings, the use of garlic should not be considered a primary approach to lowering high cholesterol and triglycerides.

Part of the confusion may result from differing effects from dissimilar garlic products. In most but not all trials, aged garlic extracts and garlic oil (both containing no allicin) have not lowered cholesterol levels in humans. Therefore, neither of these supplements can be recommended at this time for cholesterol lowering. Odour-controlled, enteric-coated tablets standardized for allicin content are available and, in some trials, appear more promising. Doctors typically recommend 900 mg per day (providing 5,000 to 6,000 mcg of allicin), divided into two or three administrations.

Green tea has been shown to lower total cholesterol levels and improve people’s cholesterol profile, decreasing LDL cholesterol and increasing HDL cholesterol according to preliminary studies. However, not all trials have found that green tea intake lowers lipid levels. Much of the research documenting the health benefits of green tea is based on the amount of green tea typically drunk in Asian countries—about three cups per day, providing 240 to 320 mg of polyphenols.

An extract of green tea, enriched with a compound present in black tea (theaflavins), has been found to lower serum cholesterol in a double-blind study of people with moderately high cholesterol levels. The average reduction in total serum cholesterol during the 12-week study was 11.3%, and the average reduction in LDL cholesterol was 16.4%. The extract used in this study provided daily 75 mg of theaflavins, 150 mg of green tea catechins, and 150 mg of other tea polyphenols.

Artichoke has moderately lowered cholesterol and triglycerides in some, but not all, human trials. One double-blind trial found that 900 mg of artichoke extract per day significantly lowered serum cholesterol and LDL cholesterol but did not decrease triglycerides or raise HDL cholesterol. Cholesterol-lowering effects occurred when using 320 mg of standardized leaf extract taken two to three times per day for at least six weeks.

Fenugreek seeds contain compounds known as steroidal saponins that inhibit both cholesterol absorption in the intestines and cholesterol production by the liver. Dietary

fibre may also contribute to fenugreek's activity. Multiple human trials (some double-blind) have found that fenugreek may help lower total cholesterol in people with moderate atherosclerosis or those having insulin-dependent or non-insulin-dependent diabetes. One human double-blind trial has also shown that defatted fenugreek seeds may raise levels of beneficial HDL cholesterol. One small preliminary trial found that either 25 or 50 grams per day of defatted fenugreek seed powder significantly lowered serum cholesterol after 20 days. Germination of the fenugreek seeds may improve the soluble fibre content of the seeds, thus improving their effect on cholesterol. Fenugreek powder is generally taken in amounts of 10 to 30 grams three times per day with meals.
Preliminary Chinese research has found that high doses (12 grams per day) of the herb fo-ti may lower cholesterol levels. Double-blind or other controlled trials are needed to determine fo-ti's use in lowering cholesterol. A tea may be made from processed roots by boiling 3 to 5 grams in a cup of water for 10 to 15 minutes. Three or more cups should be drunk each day. Fo-ti tablets containing 500 mg each are also available. Doctors may suggest taking five of these tablets three times per day.

Wild yam has been reported to raise HDL cholesterol in preliminary research. Doctors sometimes recommend 2 to 3 ml of tincture taken three to four times per day, or 1 to 2 capsules or tablets of dried root taken three times per day.

Animal studies suggest that the mushroom maitake may lower fat levels in the blood. This research is still preliminary and requires confirmation with controlled human trials.
Animal studies indicate that saponins in alfalfa seeds may block absorption of cholesterol and prevent the formation of atherosclerotic plaques.[329] However, consuming the large amounts of alfalfa seeds (80 to 120 grams per day) needed to supply high doses of these saponins may potentially cause damage to red blood cells in the body.

Cold Sores

Cold sores are painful fluid-filled blisters that form on the borders of the lips caused by a herpes virus, most often the herpes simplex 1 virus.

Cold sores should not be confused with canker sores, which are small ulcerations in the mouth. The blisters, which are contagious, later break, ooze, and crust over before healing. Recurrences are common and can be triggered by stress, sun exposure, illness, and menstruation. Genital herpes infection (usually caused by herpes simplex 2) is a related condition and potentially may be treated in much the same way as herpes simplex 1.

What are the symptoms of cold sores?

Cold sores may appear with colds, fevers, exposure to excessive sunlight, or menstrual periods, as well as during periods of stress or illness. The sores usually disappear within two weeks. Initially, there may be tingling or prickling at the site of the cold sores even before they are visible (called the prodrome); afterward, the blisters often weep a clear fluid and form a scab. If the infection is transmitted to the eyes, it may lead to blindness.

Dietary changes that may be helpful

The herpes simplex virus has a high requirement for the amino acid, arginine. On the other hand, the amino acid, lysine, inhibits viral replication. Therefore, a diet that is low in arginine and high in lysine may help prevent or treat herpes outbreaks. Several studies have shown that increasing lysine intake can reduce the recurrence rate of cold sores.

Although people with herpes simplex reportedly consume about the same amount of arginine and lysine in their diet as do people without cold sores, it is conceivable that adjusting the intake of these amino acids may be beneficial. For that reason, many doctors advise people with cold sores to avoid foods with high arginine-to-lysine ratios, such as nuts, peanuts, and chocolate. Non-fat yogurt and other non-fat dairy can be a healthful way to increase lysine intake.

Nutritional supplements that may be helpful

The amino acid, lysine, has been reported to reduce the recurrence rate of herpes simplex infections in both preliminary and double-blind trials. The amount used in these studies was usually 1 to 3 grams per day, although some people received as little as 312 mg per day. In one double-blind trial, lysine supplementation (1,200 mg per day) failed to prevent recurrences better than placebo. However, the results of that study may have been skewed by a large number of dropouts in the placebo group who fared poorly but were not included in the analysis.

When lysine has been used for acute outbreaks, the results have been mixed. In a preliminary study, 390 mg of lysine taken at the first sign of a herpes outbreak resulted in rapid resolution of the cold sores in all cases. However, in a double-blind study, supplementing with 1 gram of lysine per day for five days did not increase the healing rate of the cold sores. Vitamin C has been shown to inactivate herpes viruses in the test tube. In one study, people with herpes infections received either a placebo or 200 mg of vitamin C plus 200 mg of flavonoids, each taken three to five times per day. Compared with the placebo, vitamin C and flavonoids reduced the duration of symptoms by 57%.

Zinc preparations have been shown to inhibit the replication of herpes simplex in the test tube. In one study, people with recurrent herpes simplex infections applied a zinc sulphate solution daily to the sores. After healing occurred, the frequency of applications was reduced to once a week for a month, then to twice a month. During an observation period of 16 to 23 months, none of these people experienced a recurrence of their cold sores.

Zinc oxide, the only commercially available form of zinc for topical application, is probably ineffective as a treatment for herpes simplex. Other forms of topical zinc can be obtained by prescription, through a compounding pharmacist. However, because an excessive concentration of zinc may cause skin irritation, topical zinc should be used only with the supervision of a doctor knowledgeable in its use.

In a preliminary trial, a piece of cotton saturated with vitamin E oil was applied to newly erupted cold sores and held in place for 15 minutes. The first application was performed in the dentist's office. Participants were instructed to repeat the procedure every three hours for the rest of that day, and then three times daily for two more days. In nearly all cases, pain disappeared in less than eight hours. Application of vitamin E oil appeared to accelerate healing of the cold sores. Similar results were reported in another study.

Application of an ointment containing propolis, the resin collected by bees from trees, has been shown to relieve genital herpes more effectively than topical acyclovir. It is likely that this treatment might also benefit people with cold sores, although this has not been tested. Propolis ointment should be applied four times per day.
Boric acid has antiviral activity. In a double-blind trial, topical application of an ointment containing boric acid (in the form of sodium borate) shortened the duration of cold sores

by about one-third. However, concerns about potential toxicity have led some doctors to avoid the use of boric acid for this purpose.

A preliminary study found that people with recurrent cold sores have lower iron stores than healthy people. This may mean that correcting an iron deficiency might help prevent herpes outbreaks, but more research is necessary. Most people should not take iron supplements unless they have an iron deficiency, confirmed by a blood test.

Herbs that may be helpful

Lemon balm has antiviral properties. A cream containing an extract of lemon balm has been shown in double-blind trials to speed the healing of cold sores. In one double-blind trial, topical application of a 1% 70:1 extract of lemon-balm leaf cream, four times daily for five days, led to significantly fewer symptoms and fewer blisters than experienced by those using a placebo cream. In most studies, the lemon-balm cream was applied two to four times per day for five to ten days.

The proanthocyanidins in witch hazel have been shown to exert significant antiviral activity against herpes simplex 1 in the test tube. In a double-blind trial, people with acute cold sore outbreaks applied a topical cream containing 2% witch hazel bark extract or placebo six times a day for three to eight days. By the end of the eighth day, those using the witch-hazel cream had a pronounced and statistically significant reduction in the size and spread of the inflammation when compared to the placebo group.
Liquorice in the form of a cream or gel may be applied directly to herpes sores three to four times per day. Liquorice extracts containing glycyrrhizin or glycyrrhetinic acid should be used, as these are the constituents in liquorice most likely to provide activity against the herpes simplex virus. There are no controlled trials demonstrating the effectiveness of this treatment, but a cream containing a synthetic version of glycyrrhetinic acid (carbenoxolone) was reported to speed healing time and reduce pain in people with herpes simplex.

In traditional herbal medicine, tinctures of various herbs, including chaparral, St. John's Wort, goldenseal, myrrh, and Echinacea, have been applied topically to herpes outbreaks in order to promote healing.

An extract from elderberry leaves, combined with St. John's Wort and soapwort (Saponaria officinalis), has been found to inhibit the herpes simplex virus in the test tube. However, the effect of these herbs on cold sores has not been studied.

Common Cold/Sore Throat

The common cold is an acute (short-term) viral infection of the upper respiratory tract that may be spread through the air (by sneezing, for example) or by contact with contaminated objects.

What are the symptoms of the common cold?

The common cold often causes runny nose, sore throat, and malaise (vague discomfort). Sore throat is sometimes a symptom of a more serious condition distinct from the common cold, such as strep throat, which may require medical diagnosis and treatment with appropriate antibiotics. Since it is a viral infection, antibiotics are not effective against the common cold.

Dietary changes that may be helpful

Excessive sugar, dietary fat, and alcohol have been reported to impair immune function, although no specific information is available on how these foods may affect the course of the common cold.

Nutritional supplements that may be helpful

A review of 21 controlled trials using 1 to 8 grams of vitamin C per day found that "in each of the twenty-one studies, vitamin C reduced the duration of episodes and the severity of the symptoms of the common cold by an average of 23%." The optimum amount of vitamin C to take for cold treatment remains in debate but may be as high as 1 to 3 grams per day, considerably more than the 120 to 200 mg per day that has been suggested as optimal intake for healthy adults. A review of 23 controlled trials found that vitamin C supplementation produces a greater benefit for children than for adults. The same review found that a daily amount of 2 grams or more was superior to a daily amount of 1 gram at reducing the duration of cold symptoms.

Zinc interferes with viral replication in test tubes, may interfere with the ability of viruses to enter cells of the body, may help immune cells to fight a cold, and may relieve cold symptoms when taken as a supplement. In double-blind trials, zinc lozenges have reduced the duration of colds in adults but have been ineffective in children. Lozenges containing zinc gluconate, zinc gluconate-glycine, and, in most trials, zinc acetate have been effective; most other forms of zinc and lozenges flavoured with citric acid, tartaric acid, sorbitol, or mannitol have been ineffective. Trials using these other forms of zinc have failed, as have trials that use insufficient amounts of zinc. For the alleviation of cold symptoms, lozenges providing 13 to 25 mg of zinc gluconate, zinc gluconate-glycine, or zinc acetate are used every two hours while awake but only for several days. The best effect is obtained when lozenges are used at the first sign of a cold.

An analysis of the major zinc trials has claimed that evidence for efficacy is "still lacking." However, despite a lack of statistical significance, this compilation of data from six double-blind trials found that people assigned to zinc had a 50% decreased risk of still having symptoms after one week compared with those given placebo. Some trials included in this analysis used formulations containing substances that may inactivate zinc salts. Other reasons for failure to show statistical significance, according to a recent analysis of these studies, may have been small sample size (not enough people) or not enough zinc given. Thus, there are plausible reasons why the authors were unable to show statistical significance, even though positive effects are well supported in most trials using gluconate, gluconate-glycine, or acetate forms of zinc.

Zinc nasal sprays may be even more effective than zinc lozenges at speeding the resolution of cold symptoms. A double-blind trial showed a 74% reduction in symptom duration in people using a zinc nasal spray four times daily, compared with the 42 to 53% reduction reported in trials using zinc gluconate or zinc acetate lozenges. The average duration of symptoms after the beginning of treatment was 2.3 days in the people receiving zinc, compared with 9.0 days in those receiving placebo. However, in another double-blind study, zinc nasal spray was no more effective than a placebo; in both groups the median duration of symptoms was seven days.

Propolis is the resinous substance collected by bees from the leaf buds and bark of trees, especially poplar and conifer trees. Propolis extracts may be helpful in preventing and shortening the duration of the common cold. A preliminary clinical trial reported

propolis extract (daily dose not given) reduced upper respiratory infections in children. In one small, double-blind trial of propolis for the common cold, the group taking propolis extract (amount unstated) became free of symptoms more quickly than the placebo group. Most manufacturers recommend 500 mg of oral propolis products once or twice daily.

Herbs that may be helpful

Four different categories of herbs are used to help combat the common cold. First, herbs that stimulate the immune system to fight the infection are used during the onset of the common cold—Echinacea and Asian ginseng are two examples. Second, herbs known as diaphoretics promote a mild fever and sweating both of which are useful for fighting infection. A fever is a sign that the immune system is working; thus, diaphoretics may also be immune stimulators—elder, boneset, and yarrow are three examples. The third category includes herbs that, based on test tube studies, may directly kill the viruses that cause colds—goldenseal, myrrh, and usnea are examples. Finally, a fourth category of herbs are used to alleviate cold symptoms, such as sore throats. These herbs tend to be high in mucilage and are soothing and anti-inflammatory, or have tannins that are astringent (i.e., that constrict boggy tissue, promoting healing)—marshmallow and red raspberry are two examples.

As the following chart shows, many herbs fit into more than one category; goldenseal is one example, as it has both immune-stimulating and antiviral properties.

Double-blind trials have shown that various Echinacea extracts shorten the duration of the common cold. Fresh pressed juice of Echinacea (E. purpurea) flowers preserved with alcohol, and tinctures of Echinacea (E. pallida) root are the forms most commonly studied and proven effective. In addition, several double-blind trials have found that Echinacea (E. angustifolia) root tinctures in combination with wild indigo, boneset, and homeopathic arnica reduce symptoms of the common cold. In one double-blind trial, a proprietary formulation of Echinacea, white cedar, and wild indigo, known as Esberitox®, reduced the length and severity of cold symptoms significantly more than did placebo.[21] There is one, as yet unpublished, study that has found Echinacea to be ineffective for the common cold, and another double-blind study found that Echinacea was not effective for the treatment of upper respiratory tract infections in children aged 2 to 11 years.

Echinacea is believed to work primarily through immune stimulation. The minimum effective amount of Echinacea tincture or juice appears to be 3 ml three times per day. Higher amounts, such as 3 to 5 ml every two hours, is generally better and is safe, even for children. Encapsulated products may also be effective, according to a double-blind trial using the root of E. pallida. Generally, capsules containing 300 to 600 mg are used three times per day. According to one double-blind trial, employees of a nursing home who consumed Echinacea tea at the onset of a cold or flu reduced the duration of their symptoms by about two days when compared with people consuming a placebo tea. The participants drank five to six cups of tea on the first day of their symptoms and decreased this by one cup each day over the next five days.

Double-blind trials indicate that regular use of Echinacea to prevent colds does not work. Therefore, it is currently recommended to use Echinacea at the onset of a cold, for a total of seven to ten days.

Andrographis contains bitter constituents that are believed to have immune-stimulating and anti-inflammatory actions.[30] Several double-blind trials have found that andrographis may help reduce symptom severity in people with common colds. Though the earliest clinical trial among these showed modest benefits, later studies have tended to be more supportive. A combination of a standardized andrographis extract combined with eleuthero, known as Kan jang, has also been shown in a double-blind trial to reduce symptoms of the common cold.

In a double-blind trial, participants took one capsule per day of a placebo or a garlic supplement that contained stabilized allicin (the amount of garlic per capsule was not specified) for 12 weeks between November and February. During that time, the garlic group had 63% fewer colds and 70% fewer days ill than did the placebo group.
Herbal supplements can help strengthen the immune system and fight infections.

Adaptogens, which include eleuthero, Asian ginseng, astragalus, and schisandra, are thought to help keep various body systems—including the immune system—functioning optimally. They have not been systematically evaluated as cold remedies. However, one double-blind trial found that people who were given 100 mg of Asian ginseng extract in combination with a flu vaccine experienced a lower frequency of colds and flu compared with people who received only the flu vaccine.

According to test tube experiments, wild indigo stimulates immune function, which might account for its role in fighting the common cold and flu. In combination with Echinacea, boneset, and homeopathic arnica, as mentioned above, wild indigo has prevented and reduced symptoms of the common cold in double-blind research. Wild indigo is traditionally considered a strong antimicrobial agent, though it has not yet been investigated as an agent against cold viruses.

Boneset is another immune stimulant and diaphoretic that helps fight off minor viral infections, such as the common cold. In addition, linden and hyssop may promote a healthy fever and the immune system's ability to fight infections. Yarrow is another diaphoretic that has been used for relief of sore throats, though it has not yet been researched for this purpose.

Goldenseal root contains two alkaloids, berberine and canadine, with antimicrobial and mild immune-stimulating effects. However, due to the small amounts of alkaloids occurring in the root, it is unlikely these effects would occur outside the test tube. Goldenseal soothes irritated mucous membranes in the throat, making it potentially useful for those experiencing a sore throat with their cold. Human research on the effectiveness of goldenseal or other berberine-containing herbs, such as Oregon grape, barberry, or goldthread (Coptis chinensis), for people with colds has not been conducted.

Goldenseal root should only be used for short periods of time. Goldenseal root extract, in capsule or tablet form, is typically taken in amounts of 4 to 6 grams three times per day. Using goldenseal powder as a tea or tincture may soothe a sore throat. Because goldenseal is threatened in the wild due to over-harvesting, substitutes such as Oregon grape should be used whenever possible.

Elderberry has shown antiviral activity and thus may be useful for some people with common colds. Elder flowers are a traditional diaphoretic remedy for helping to break

fevers and promote sweating during a cold. Horseradish has antibiotic properties, which may account for its usefulness in easing throat and upper respiratory tract infections. The resin of the herb myrrh has been shown to kill various microbes and to stimulate macrophages (a type of white blood cell). Usnea has a traditional reputation as an antiseptic and is sometimes used for people with common colds.

Herbs high in mucilage, such as slippery elm, mallow (Malvia sylvestris), and marshmallow, are often helpful for symptomatic relief of coughs and irritated throats. Mullein has expectorant and demulcent properties, which accounts for this herb's historical use as a remedy for the respiratory tract, particularly in cases of irritating coughs with bronchial congestion. Coltsfoot is another herb with high mucilage content that has been used historically to soothe sore throats. However, it is high in pyrrolizidine alkaloids—constituents that may damage the liver over time. It is best to either avoid coltsfoot or look for products that are free of pyrrolizidine alkaloids.

Red raspberry, blackberry, and blueberry leaves contain astringent tannins that are helpful for soothing sore throats. Sage tea may be gargled to soothe a sore throat. All of these remedies are used traditionally, but they are currently not supported by modern research.

Eucalyptus oil is often used in a steam inhalation to help clear nasal and sinus congestion. It is said to work similarly to menthol, by acting on receptors in the nasal mucous membranes, leading to a reduction of nasal stuffiness. Peppermint may have a similar action and is a source of small amounts of menthol.

Meadowsweet has been used historically for a wide variety of conditions. It is reputed to break fevers and to promote sweating during a cold or flu. Meadowsweet contains salicylates, which possibly give the herb an aspirin-like effect, particularly in relieving aches and pains during a common cold. While not as potent as willow, which has a higher salicin content, the salicylates in meadowsweet do give it a mild anti-inflammatory effect and the potential to reduce fevers during a cold or flu. However, this role is based on historical use and knowledge of the chemistry of meadowsweet's constituents; to date, no human studies have been completed with meadowsweet.

Traditional Chinese Medicine practitioners use Chinese artichoke (Stachys sieboldii), a species similar to wood betony(Stachys betonica), for colds and flu. It is unknown whether wood betony would be useful for people with the common cold.

Colic

Colic is a common problem in infants in which the baby is healthy but has periods of inconsolable crying, apparently caused by abdominal pain. Colic usually develops within a few weeks of birth and disappears by the baby's fourth month.

What are the symptoms of colic?

Colic may cause infants, typically less than four months old, to cry inconsolably. The attacks usually occur in the late afternoon and evening, sometimes lasting for hours. During a colicky period, babies may bring their knees up, clench their fists, grimace, hold their breath, and generally be more active.

Dietary changes that may be helpful

Allergies may be responsible for colic in some infants. If the child is fed with formula, the problem may be an intolerance to milk proteins from a cows' milk-based formula. Switching to a soy formula may ease colic in such cases. Infants who are sensitive to both milk and soy may be given a hypoallergenic formula containing extensively hydrolyzed proteins. However, some children are sensitive even to these formulas.

A true food protein intolerance in infants may result in persistent distress attributed to irritation of the oesophagus caused by reflux (partial spitting up). These infants may respond to an amino acid-based formula. In a clinical trial, infants who were intolerant of soy and extensively hydrolyzed formula, and who had failed to respond to various formula changes, were switched to an amino-acid formula (Neocate). After two weeks, all the infants receiving the amino acid-based formula showed less distressed behaviour and fewer symptoms of reflux.

If a baby is breast-fed, certain foods in the mother's diet may provoke an allergic reaction in the baby. Cows' milk consumed by a breast-feeding mother has been shown in some, but not all, studies to trigger colic. Cows' milk proteins, which may trigger allergic reactions, have been found at higher levels in milk from breast-feeding mothers with colicky infants than in milk from mothers with non-colicky infants. Changing to a low-allergenic formula or restricting the mother's diet to exclude certain allergy-triggering foods significantly reduced colic symptoms in the infants in one double-blind trial. A healthcare provider can help determine which foods eaten by breast-feeding mothers may be contributing to colic.

Lifestyle changes that may be helpful

All infants, particularly those with colic, need to be fed on demand and not by a specific clock schedule. Often a baby's cry is triggered by discomfort caused by low blood sugar. Unlike adults, infants do not have a carefully regulated ability to maintain healthy blood sugar levels in the absence of food. This physiological shortcoming of infants can be solved only by feeding on demand.

In one trial, parents were taught not to let babies cry unnecessarily but rather to attempt feeding right away in response to the infant's cry. If that failed, parents were taught to try to respond to the cry in other ways, such as holding the infant or providing the opportunity to sleep. These parents were also given the solid medical advice that overfeeding is never caused by feeding on demand nor will the baby be "spoiled" by such an approach. As a result of this intervention, colic was dramatically (and statistically significantly) reduced, compared with a group of mothers given different instructions.

Herbs that may be helpful

Carminatives are a class of herbs commonly used for infants with colic. These herbs tend to relax intestinal spasms.

Chamomile is a carminative with long history of use as a calming herb and may be used to ease intestinal cramping in colicky infants. A soothing tea made from chamomile, vervain, liquorice, fennel, and lemon balm has been shown to relieve colic more effectively than placebo. In this study, approximately 1/2 cup (150 ml) of tea was given during each colic episode up to a maximum of three times per day.

In a double-blind study of infants with colic, supplementation with an emulsion of fennel seed oil relieved colic in 65% of cases, compared with 24% of infants receiving a placebo, a statistically significant difference. The amount used was 1 to 4 teaspoons, up to four times per day, of a water emulsion of 0.1% fennel seed oil.

Hyssop has mild sedative properties and may also be helpful in relieving colic, but research is lacking. Though no definitive information on hyssop supplementation is available, 1 teaspoon of hyssop herb steeped in 1 cup of just-boiled water in a closed container for 15 to 20 minutes, then given in sips from a bottle over a period of 2 to 3 hours may help calm colic.

Caraway, like chamomile and fennel, relieves intestinal cramping and, in this way, may ease symptoms of colic. One tablespoon (15 grams) of caraway seed is mixed with 8 oz (240 ml) of just-boiled water and steeped in a closed container for at least 10 minutes. Three ounces of vegetable glycerine is added, and the resulting mixture is stored in a bottle in the refrigerator. Up to 1/2 teaspoon (2.5 ml) of the liquid may be given every 30 minutes to a colicky infant or given 15 minutes before feeding.

Several other gas-relieving herbs used in traditional medicine for colic are approved in Germany for intestinal spasms. These include yarrow, garden angelica (Angelica archangelica),peppermint, cinnamon, and fumitory (Fumaria officinalis). These herbs are generally given by healthcare professionals as teas or decoctions to the infant. Peppermint tea should be used with caution in infants and young children, as they may choke in reaction to the strong menthol.

Holistic approaches that may be helpful

The symptoms of colic may be linked to mild biomechanical disturbances of the spinal joints and may respond to manipulation. A large, preliminary study of infants treated by chiropractic manipulation for colic reported marked improvement, often after one treatment. This echoed an earlier study in which questionnaires sent to parents of 132 infants under chiropractic care revealed that 91% of the respondents observed improvement in their babies' symptoms after two to three manipulations. In a controlled trial, infants were treated daily for two weeks either with a placebo medication or with a series of three to five treatments using gentle "fingertip" spinal manipulations. Those treated with manipulation experienced a 67% reduction in daily hours of colic, compared with only a 38% reduction in infants on medication.

Conjunctivitis and Blepharitis

Conjunctivitis is inflammation of the clear membrane that lines the eye.
Conjunctivitis is caused most commonly by infection from viruses or bacteria, or by an allergic reaction, though other causes exist, such as overexposure to sun, wind, smog, chlorine, or contact lens solution. Pinkeye is the common name for conjunctivitis. Blepharitis is inflammation of the eyelid; most commonly, it is caused by a bacterial infection.

What are the symptoms of conjunctivitis?

Conjunctivitis and blepharitis may cause mild discomfort with tearing, itching, burning, light sensitivity, and thickening of the eyelids. They may also produce a crust or discharge, occasionally causing the eyelids to stick together during sleep. The eyes and eyelids may become red, but usually there is no blurring or change in vision.

Nutritional supplements that may be helpful

Vitamin A deficiency has been reported in people with chronic conjunctivitis.[1] It is unknown whether vitamin A supplementation can prevent conjunctivitis or help people who already have the condition.

Herbs that may be helpful

Several herbs have been traditionally used to treat eye inflammation. Examples include calendula, eyebright, chamomile, and comfrey. None of these herbs has been studied for use in conjunctivitis or blepharitis. As any preparation placed on the eye must be kept sterile, topical use of these herbs in the eyes should only be done under the supervision of an experienced healthcare professional.

Goldenseal and Oregon grape contain the antibacterial constituent known as berberine. While topical use of berberine in eye drops has been clinically studied for eye infections, the use of the whole herbs has not been studied for conjunctivitis or blepharitis.

Constipation

Constipation is a condition in which a person experiences a change in normal bowel habits, characterized by a decrease in frequency and/or passage of hard, dry stools. Constipation can also refer to difficult defecation or to sluggish action of the bowels.
The most common cause of constipation is dietary, which is discussed below. However, constipation may be a component of irritable bowel syndrome or other conditions ranging from drug side effects to physical immobility. Serious diseases, including colon cancer, may sometimes first appear as bowel blockage leading to acute constipation. However, constipation itself does not appear to increase the risk of colon cancer, contrary to popular opinion.

Although dietary and other natural approaches discussed below are often effective, individuals with constipation should be evaluated by a doctor to rule out potentially serious causes.

What are the symptoms of constipation?

Symptoms of constipation include infrequent stools, hard stools, and excessive straining to move the bowels. Frequency of bowel movements and severity of symptoms may vary from person to person.

Dietary changes that may be helpful

Fibre, particularly insoluble fibre, is linked with prevention of chronic constipation. Insoluble fibre from food acts like a sponge, pulling water into the stool and making it easier to pass. Insoluble fibre comes mostly from vegetables, beans, brown rice, whole wheat, rye, and other whole grains. Switching from white bread and white rice to whole wheat bread and brown rice often helps relieve constipation. It is important to drink lots of fluid along with the fibre—at least 16 ounces of water per serving of fibre. Otherwise, the fibre may actually worsen the constipation.

In addition, wheat bran may be added to the diet. Doctors frequently suggest a quarter cup or more per day of wheat bran along with fluid. An easy way to add wheat bran to the diet is to put it in breakfast cereal or switch to high-bran cereals. Wheat bran often

reduces constipation, although not all research shows it to be successful. Higher amounts of wheat bran are sometimes more successful than lower amounts.

A double-blind trial found that chronic constipation among infants and problems associated with it were triggered by intolerance to cows' milk in two-thirds of the infants studied. Symptoms disappeared in most infants when cows' milk was removed from their diet. These results were confirmed in two subsequent, preliminary trials. Constipation triggered by other food allergies might be responsible for chronic constipation in some adults. If other approaches do not help, these possibilities may be discussed with a physician.

Lifestyle changes that may be helpful

Exercise may increase the muscular contractions of the intestine, promoting elimination. Nonetheless, the effect of exercise on constipation remains unclear.

Nutritional supplements that may be helpful

Glucomannan is a water-soluble dietary fibre that is derived from konjac root. Like other sources of fibre, such as psyllium and fenugreek, glucomannan is considered a bulk-forming laxative. A preliminary trial and several double-blind trials have found glucomannan to be an effective treatment for constipation. The amount of glucomannan shown to be effective as a laxative is 3 to 4 grams per day. In constipated people, glucomannan and other bulk-forming laxatives generally help produce a bowel movement within 12 to 24 hours.

Chlorophyll, the substance responsible for the green colour in plants, may be useful for a number of gastrointestinal problems. In a preliminary trial, chlorophyll supplementation eased chronic constipation in elderly people.

Herbs that may be helpful

The laxatives most frequently used world-wide come from plants. Herbal laxatives are either bulk-forming or stimulating.

Bulk-forming laxatives come from plants with a high fibre and mucilage content that expand when they come in contact with water; examples include psyllium, flaxseed, and fenugreek. As the volume in the bowel increases, a reflex muscular contraction occurs, stimulating a bowel movement. These mild laxatives are best suited for long-term use in people with constipation.

Many doctors recommend taking 7.5 grams of psyllium seeds or 5 grams of psyllium husks, mixed with water or juice, one to two times per day. Some doctors use a combination of senna (18%) and psyllium (82%) for the treatment of chronic constipation. This has been shown to work effectively for people in nursing homes with chronic constipation.

Basil (Ocimum basilicum) seed has been found to relieve constipation by acting as a bulk-forming laxative in one preliminary study. A similar study showed the seeds to be useful following major surgery for elderly people with constipation. Alginic acid, one of the major constituents in bladderwrack(Fucus vesiculosus), is a type of dietary fibre that may be used to relieve constipation. However, human studies have not been conducted on the effectiveness of bladderwrack for this condition.

Stimulant laxatives are high in anthraquinone glycosides, which stimulate bowel muscle contraction. The most frequently used stimulant laxatives are senna leaves, cascara bark, and aloe latex. While senna is the most popular, cascara has a somewhat milder action. Aloe is very potent and should be used with caution. Other stimulant laxatives include buckthorn, alder buckthorn (Rhamnus frangula), and rhubarb (Rheum officinale, R. palmatum).

The unprocessed roots of fo-ti possess a mild laxative effect. The bitter compounds in dandelion leaves and root are also mild laxatives.

Holistic approaches that may be helpful

Anecdotal reports have claimed that acupuncture is beneficial in the treatment of constipation. However, a small, controlled study of eight people with constipation concluded that six acupuncture treatments over two weeks did not improve bowel function during the course of the study. Placebo-controlled trials of longer duration are needed to determine whether acupuncture is a useful treatment for constipation.
Biofeedback techniques have been shown to significantly increase the frequency of bowel movements among women with chronic constipation.

Cough

A cough is a symptom of many diseases. Most coughs come from simple viral infections, such as the common cold. Sometimes, but not always, mucus is produced with the cough. If the colour is green or yellow, it may be a hint of a bacterial infection, although this is not always a reliable indicator. If the colour is red, there may be bleeding in the lungs. Any cough that produces blood or blood-stained mucus, as well as any cough that lasts more than two weeks, requires a visit to a medical professional for diagnosis.

Herbs that may be helpful

A number of herbs have a rich history of use for treating coughs due to colds, bronchitis, or other mild conditions. Only a few studies have examined the effectiveness of these herbs. However, their effectiveness is well-known by practitioners of herbal medicine the world over. Among those herbs that have been shown to have some degree of cough-relieving activity are marshmallow, sundew, and coltsfoot. Use of coltsfoot should be limited to preparations of the leaves and flowers only, as the root is high in pyrrolizidine alkaloids, constituents that may be toxic to the liver.

Thyme has a long history of use in Europe for the treatment of dry, spasmodic coughs as well as for bronchitis. Many constituents in thyme team up to provide its antitussive (preventing and treating a cough), antispasmodic, and expectorant actions. The primary constituents are the volatile oils, which include the phenols thymol and carvacol. These are complemented by the actions of flavonoids along with saponins. Thyme, either alone or in combination with herbs such as sundew, continues to be one of the most commonly recommended herbs in Europe for the treatment of dry, spasmodic coughs as well as for whooping cough. Because of its apparent safety, it has become a favourite for treating coughs in small children.

The active constituents in anise(Pimpinella anisum), particularly the terpenoid anethole, give this plant a delightful flavour. As an antispasmodic, it helps in gently relieving spasmodic coughs.

The mucilage of slippery elm gives it a soothing effect for coughs. Usnea also contains mucilage, which may be helpful in easing irritating coughs. There is a long tradition of using wild cherry syrups to treat coughs. Other traditional remedies to relieve coughs include bloodroot, catnip, comfrey (the above-ground parts, not the root), horehound, elecampane, mullein, lobelia, hyssop, liquorice, mallow, (Malvia sylvestris),red clover, ivy leaf, pennyroyal (Hedeoma pulegioides, Mentha pulegium),onion, (Allium cepa), and plantain (Plantago lanceolata, P. major). None of these has been investigated in human trials, so their true efficacy for relieving coughs is unknown.

The early 19th-century Eclectic physicians in the United States (who used herbs as their main medicine) not only employed eucalyptus oil to sterilize instruments and wounds but also recommended a steam inhalation of the oil's vapour to help treat asthma, bronchitis, whooping cough, and emphysema.

Holistic approaches that may be helpful

Traditional Chinese Medicine (TCM) may be helpful in the treatment of a cough. Cupping (the use of a glass cup to create suction over a skin surface) is a traditional Chinese therapy, often used for patients to help relieve a cough. An uncontrolled study using cupping to relieve coughs reported a curative response in 35 of 41 patients. Other TCM therapies, including acupuncture and herbal medicine, may be helpful in cough-producing ailments such as asthma and bronchitis.

Depression

Depression is a condition characterized by unhappy, hopeless feelings. It can be a response to stressful events, hormonal imbalances, biochemical abnormalities, or other causes.

Mild depression that passes quickly may not require any diagnosis or treatment. However, when depression becomes recurrent, constant, or severe, it should be diagnosed by a licensed counsellor, psychologist, social worker, or doctor. Diagnosis may be crucial for determining appropriate treatment. For example, depression caused by low thyroid function can be successfully treated with prescription thyroid medication. Suicidal depression often requires prescription antidepressants. Persistent mild to moderate depression triggered by stressful events is often best treated with counselling and not necessarily with medications.

When depression is not a function of external events, it is called endogenous. Endogenous depression can be due to biochemical abnormalities. Lifestyle changes, nutritional supplements, and herbs may be used with people whose depression results from a variety of causes, but these natural interventions are usually best geared to endogenous depression.

What are the symptoms of depression?

A diagnosis of depression requires at least five of the following symptoms.

- ☑ Depressed mood.
- ☑ Diminished interest or pleasure in all or most activities, most of the day, nearly every day.

- ☑ Significant weight loss or gain when not dieting (e.g., more than 5% of body weight in a month).
- ☑ Insomnia or excessive sleeping nearly every day.
- ☑ Agitation or depression in voluntary muscle movements nearly every day.
- ☑ Fatigue or loss of energy nearly every day.
- ☑ Feelings of worthlessness or excessive and inappropriate guilt nearly every day.
- ☑ Diminished ability to think or concentrate, or indecisiveness nearly every day.
- ☑ Recurrent thoughts of death (not just fear of death), recurrent suicidal ideation without a plan, or a suicide attempt or specific plan to commit suicide.

Dietary changes that may be helpful

Although some research has produced mixed results, double-blind trials have shown that food allergies can trigger mental symptoms, including depression. People with depression who do not respond to other natural or conventional approaches should consult a doctor to diagnose possible food sensitivities and avoid offending foods.

Restricting sugar and caffeine in people with depression has been reported to elevate mood in preliminary research. How much of this effect resulted from sugar and how much from caffeine remains unknown. Researchers have reported that psychiatric patients who are heavy coffee drinkers are more likely to be depressed than other such patients. However, it remains unclear whether caffeine can cause depression or whether depressed people were more likely to want the "lift" associated with drinking a cup of coffee. In fact, "improvement in mood" is considered an effect of long-term coffee consumption by some researchers, a concept supported by the fact that people who drink coffee have been reported to have a 58–66% decreased risk of committing suicide compared with non-coffee drinkers. Nonetheless, a symptom of caffeine addiction can be depression.[7] Thus, consumption of caffeine (mostly from coffee) has paradoxically been linked with both improvement in mood and depression by different researchers. People with depression may want to avoid caffeine as well as sugar for one week to see how it affects their mood.

There is evidence that people with major depression may have insensitivity to insulin and impaired glucose tolerance. Whether treatment of impaired glucose tolerance helps depression is unknown, but a doctor can order laboratory tests to detect such abnormalities, and initiate treatment as appropriate.

The amount and type of dietary fat consumed may influence the incidence of depression. Previous studies have found that diet regimens designed to lower cholesterol levels may reduce death from cardiovascular disease, but may also heighten the incidence of depression. Does low cholesterol cause depression? It appears not, since studies have shown no adverse effect on mood in people taking cholesterol-lowering drugs. The connection more likely has to do with the balance of fats in the diet. Diets to lower blood cholesterol usually focus on restricting total fat intake while increasing the intake of polyunsaturated fats (e.g., corn and soybean oils). These oils are very high in omega-6 fatty acids, but the recommended diets otherwise lack important omega-3 fatty acids (EPA and DHA). A high intake of omega-6 fatty acids relative to omega-3 fatty acids and an inadequate intake of omega-3 fatty acids (e.g., from fish and fish oils) have been associated with increased levels of depression. People

who eat diets high in omega-3 fatty acids from fish have a lower incidence of depression and suicide.

Lifestyle changes that may be helpful

Exercise increases the body's production of endorphins—chemical substances that can relieve depression. Scientific research shows that routine exercise can positively affect mood and help with depression. As little as three hours per week of aerobic exercise can profoundly reduce the level of depression. One trial compared the effects of an exercise training program with those of a prescription antidepressant drug in people over 50 years of age. The researchers found the two approaches to be equally effective after 16 weeks of treatment.

Nutritional supplements that may be helpful

Iron deficiency is known to affect mood and can exacerbate depression, but it can only be diagnosed and treated by a doctor. While iron deficiency is easy to fix with iron supplements, people who have not been diagnosed with iron deficiency should not supplement iron.

Deficiency of vitamin B12 can create disturbances in mood that respond to B12 supplementation. Significant vitamin B12 deficiency is associated with a doubled risk of severe depression, according to a study of physically disabled older women.[21] Depression caused by vitamin B12 deficiency can occur even if there is no B12 deficiency-related anaemia.

Mood has been reported to sometimes improve with high amounts of vitamin B12 (given by injection), even in the absence of a B12 deficiency. Supplying the body with high amounts of vitamin B12 can only be done by injection. However, in the case of overcoming a diagnosed B12 deficiency, one can follow an initial injection with oral maintenance supplementation (1 mg per day), even when the cause of the deficiency is a malabsorption problem such as pernicious anaemia.

A deficiency of the B vitamin folic acid can also disturb mood. A large percentage of depressed people have low folic acid levels. Folic acid supplements appear to improve the effects of lithium in treating manic-depressives. Depressed alcoholics report feeling better with large amounts of a modified form of folic acid. Anyone suffering from chronic depression should be evaluated for possible folic acid deficiency by a doctor. Those with abnormally low levels of folic acid are sometimes given short-term, high amounts of folic acid (10 mg per day).

Preliminary evidence indicates that people with depression may have lower levels of inositol. Supplementation with large amounts of inositol can increase the body's stores by as much as 70%. In a double-blind trial, depressed people who received 12 grams of inositol per day for four weeks had a significant improvement in symptoms compared to those who took placebo. In a double-blind follow-up to this trial, the antidepressant effects of inositol were replicated. Half of those who responded to inositol supplementation relapsed rapidly when inositol was discontinued.

Oral contraceptives can deplete the body of vitamin B6, a nutrient needed for maintenance of normal mental functioning. Double-blind research shows that women who are depressed and who have become depleted of vitamin B6 while taking oral contraceptives typically respond to vitamin B6 supplementation. In one trial, 20 mg of vitamin B6 were taken twice per day. Some evidence suggests that people who are

depressed—even when not taking the oral contraceptive—are still more likely to be B6 deficient than people who are not depressed.

Several clinical trials also indicate that vitamin B6 supplementation helps alleviate depression associated with premenstrual syndrome (PMS), although the research remains inconsistent. Many doctors suggest that women who have depression associated with PMS take 100–300 mg of vitamin B6 per day—a level of intake that requires supervision by a doctor.

Less than optimal intake of selenium may have adverse effects on psychological function, even in the absence of signs of frank selenium deficiency. In a preliminary trial of healthy young men, consumption of a high-selenium diet (226.5 mcg selenium per day) was associated with improved mood (i.e., decreased confusion, depression, anxiety, and uncertainty), compared to consumption of a low-selenium diet (62.6 mcg selenium per day.) In a double-blind trial, people who had a low selenium intake experienced greater improvement in depression symptoms after selenium supplementation (100 mcg per day) than did people with adequate selenium intake, suggesting that low-level selenium deficiency may contribute to depression.

Vitamin D supplementation may be associated with elevations in mood. In a double-blind trial, healthy people were given 400–800 IU per day of vitamin D3, or no vitamin D3, for five days during late winter. Results showed that vitamin D3 significantly enhanced positive mood and there was some evidence of a reduction in negative mood compared to a placebo. In another double-blind trial, people without depression took 600 IU of vitamin D along with 1,000 mg of calcium, or a placebo, twice daily for four weeks. Compared to the placebo, combined vitamin D and calcium supplementation produced significant elevations in mood that persisted at least one week after supplementation was discontinued.

Omega-3 fatty acids found in fish oil, particularly DHA, are needed for normal nervous system function. Depressed people have been reported to have lower omega-3 fatty acid levels (e.g., DHA) than people who are not depressed. Low levels of the other omega-3 fatty acid from fish, EPA, have correlated with increased severity of depression. In a double-blind trial, people with manic depression were given a very high intake of supplemental omega-3 fatty acids (enough fish oil to contain 9.6 grams of omega-3 fatty acids per day) for four months. Ten of 16 people in the placebo group eventually were forced to discontinue the trial due to worsening depression compared with only 3 of 14 taking omega-3 fatty acids. Some scores of depression levels fell as much as 48% in the omega-3 fatty acids group.

EPA alone has also been reported to be beneficial. There is one case report of a man with a long history of severe depression who showed clear improvement within one month of starting a purified EPA supplement (4 grams per day of the ethyl ester of eicosapentaenoic acid [E-EPA]). In a double-blind study, supplementation with E-EPA for 12 weeks was significantly more effective than a placebo at relieving symptoms of depression. E-EPA was beneficial, even though the participants in the study had failed to respond adequately to conventional antidepressant drugs. The conventional medications were continued during treatment with E-EPA or placebo. An effective level of intake was 1 gram per day, whereas larger amounts of E-EPA resulted in little or no benefit. The authors of the study suggested that taking too much E-EPA might cause an imbalance with other essential fatty acids, which could reduce the effectiveness of the treatment.

The amino acid L-tyrosine can be converted into norepinephrine, a neurotransmitter that affects mood. Women taking oral contraceptives have lower levels of tyrosine, and some researchers think this might be related to depression caused by birth control pills. L-tyrosine metabolism may also be abnormal in other depressed people and preliminary research suggests supplementation might help. Several doctors recommend a 12-week trial of L-tyrosine supplementation for people who are depressed. Published research has used a very high amount—100 mg per 2.2 pounds of body weight (or about 7 grams per day for an average adult). It is not known whether such high amounts are necessary to produce an antidepressant effect.

L-phenylalanine is another amino acid that converts to mood-affecting substances (including phenylethylamine and norepinephrine). Preliminary research reported that L-phenylalanine improved mood in most of the depressed people studied. DLPA is a mixture of the essential amino acid L-phenylalanine and its synthetic mirror image, D-phenylalanine. DLPA (or the D- or L- form alone) reduced depression in 31 of 40 people in a preliminary trial. Some doctors suggest a one-month trial with 3–4 grams per day of phenylalanine for people with depression, although some researchers have found that even very low amounts—75–200 mg per day—were helpful in preliminary trials. In one double-blind trial, depressed people given 150–200 mg of DLPA per day experienced results comparable to that produced by an antidepressant drug.

Acetyl-L-carnitine may be effective for depression experienced by the elderly. A preliminary trial found that acetyl-L-carnitine supplementation was effective at relieving depression in a group of elderly people, particularly those showing more serious clinical symptoms. These results were confirmed in another similar clinical trial. In that trial, participants received either 500 mg three times a day of acetyl-L-carnitine or a matching placebo. Those receiving acetyl-L-carnitine experienced significantly reduced symptoms of depression compared to those receiving placebo. At least two other clinical studies of acetyl-L-carnitine for depression in the elderly have reported similar results. The amount typically used is 500 mg three times daily, although one trial used twice that amount.

Some studies have reported lower DHEA levels in groups of depressed patients. However, this finding has not been consistent, and in one trial, severely depressed people were reported to show increases in blood levels of DHEA.

Despite confusion regarding which depressed people might be DHEA-deficient, most double-blind trials lasting at least six weeks have reported some success in treating people with depression. After six months using 50 mg DHEA per day, “a remarkable increase in perceived physical and psychological well-being” was reported in both men and women in one double-blind trial. After only six weeks, taking DHEA in levels up to 90 mg per day led to at least a 50% reduction in depression in five of 11 patients in another double-blind trial.

Other researchers have reported dramatic reductions in depression at extremely high amounts of DHEA (90–450 mg per day) given for six weeks to adults who first became depressed after age 40 (in men) or at the time of menopause (in women) in a double-blind trial. Other double-blind research has shown that limiting supplementation to only two weeks is inadequate in treating people with depression. Despite the somewhat dramatic results reported in clinical trials lasting at least six weeks, some experts claim that in clinical practice, DHEA appears to be effective for only a minority of depressed

people. Moreover, due to fears of potential side effects, most healthcare professionals remain concerned about the use of DHEA. Depressed people considering taking DHEA should consult a doctor well versed in the use of DHEA.

Melatonin might help some people suffering from depression. Preliminary double-blind research suggests that supplementation with small amounts of melatonin (0.125 mg taken twice per day) may reduce winter depression. People with major depressive disorders sometimes have sleep disturbances. A timed-release preparation of melatonin (5–10 mg per day for four weeks) was shown to be effective at improving the quality of sleep in people with major depression who were taking fluoxetine (Prozac®), but melatonin did not enhance its antidepressant effect. There is a possibility that melatonin could exacerbate depression, so it should only be used for this purpose under a doctor's supervision.

S-adenosyl methionine (SAMe) is a substance synthesized in the body that has recently been made available as a supplement. SAMe appears to raise levels of dopamine, an important neurotransmitter in mood regulation. Higher SAMe levels in the brain are associated with successful drug treatment of depression, and oral SAMe has been demonstrated to be an effective treatment for depression in most, but not all, clinical trials. Most trials used 1,600 mg of SAMe per day. While it does not seem to be as powerful as full applications of antidepressant medications or St. John's Wort, SAMe's effects are felt more rapidly, often within one week.
Disruptions in emotional well-being, including depression, have been linked to serotonin imbalances in the brain. Supplementation with 5-hydroxytryptophan (5-HTP) may increase serotonin synthesis. Researchers are studying the possibility that 5-HTP might help people with depression. Some trials using 5-HTP with people suffering from depression have shown sign of efficacy. However, much of the research was either uncontrolled or used 5-HTP in combination with antidepressant drugs. Depressed people interested in considering this hormone precursor should consult a doctor.

There have been five case reports of chromium supplementation (200–400 mcg per day) significantly improving mood in people with a type of depression called dysthymic disorder who were also taking the antidepressant drug sertraline (Zoloft®). These case reports, while clearly limited and preliminary in scope, warrant further research to better understand the benefits, if any, of chromium supplementation in people with depression.
Phosphatidylserine (PS), a natural substance derived from the amino acid serine, affects the levels of neurotransmitters in the brain related to mood. In a preliminary trial, elderly women suffering from depression who were given 300 mg of PS per day for 30 days experienced, on average, a 70% reduction in the severity of their depression.

An isolated preliminary trial suggests the supplement NADH may help people with depression. Controlled trials are needed, however, before any conclusions can be drawn.
A deficiency of other B vitamins not discussed above (including vitamin B1, vitamin B2, vitamin B3, pantothenic acid and biotin) can also lead to depression. However, the level of deficiency of these nutrients needed to induce depression is rarely found in Western societies.

Herbs that may be helpful

St. John's Wort extracts are among the leading medicines used in Germany by medical doctors for the treatment of mild to moderate depression. Using St. John's Wort extract

can significantly relieve the symptoms of depression. People taking St. John's Wort show an improvement in mood and ability to carry out their daily routine. Symptoms such as sadness, hopelessness, worthlessness, exhaustion, and poor sleep also decrease.
St. John's Wort extract has been compared to the prescription tricyclic antidepressants imipramine (Tofranil®), amitriptyline (Elavil®), fluoxetine (Prozac®), and maprotiline (Ludiomil®). The improvement in symptoms of mild to moderate depression was similar, with notably fewer side effects, in people taking St. John's Wort.

In a double-blind trial using standard amounts of fluoxetine (Prozac®)—20 mg per day—St. John's Wort extract in the amount of 400 mg twice daily was equally effective at relieving depression in people aged 60–80 years. Another trial found that 250 mg of St. John's Wort extract two times per day was also as effective as 20 mg of fluoxetine in treating adults with mild to moderate depression. In both trials comparing St. John's Wort to fluoxetine, there were far fewer side effects reported by people taking St. John's Wort.
One clinical trial compared a higher amount of the St. John's Wort extract LI 160 (1,800 mg per day) with a higher amount of imipramine (150 mg per day) in more severely depressed people.[93] Again, the improvement was virtually the same for both groups with far fewer side effects for the St. John's Wort group. While this may point to St. John's Wort as a possible treatment for more severe cases of depression, this treatment should only be pursued under the guidance of a healthcare professional.

Two well-publicized double-blind studies published in the Journal of the American Medical Association (JAMA) concluded that St. John's Wort is not an effective treatment for depression. However, each of these studies had potential flaws. In the first study, 900–1,200 mg of St. John's Wort per day was slightly more effective than a placebo, as assessed by the Hamilton Rating Scale for Depression. However, the difference was not statistically significant. Although the remission rate was significantly greater with St. John's Wort than with placebo, only 14.3% of the patients who received the herb went into remission, causing the authors of the report to question St. John's Wort's efficacy. However, the 4.9% remission rate in the placebo group was far below the placebo response rate seen in other studies of depression. That finding suggests that many of the patients recruited for this study would have been unlikely to respond to any treatment.

In the second JAMA study, depressed patients were given one of three treatments: St. John's Wort, placebo, or an antidepressant medication with proven efficacy (e.g., sertraline; Zoloft®). Although St. John's Wort was no more effective than the placebo, by many measures neither was sertraline. The relatively poor outcome with sertraline makes one wonder whether the design of the study, or the criteria used to select participants, may have somehow skewed the results to make St. John's Wort appear less effective than it really is.

Despite these two negative studies, the bulk of the scientific evidence indicates that St. John's Wort is an effective treatment for mild to moderate depression.

Recent European trials have successfully treated mild to moderate depression using 500 to 1,050 mg of St. John's Wort per day. As an antidepressant, St. John's Wort should be taken for four to six weeks before judging its effectiveness.

Ginkgo Biloba (240 mg per day) may alleviate depression in depressed elderly people not responding to antidepressant drugs. It is unknown if ginkgo could alleviate

depression in other age groups. A small, preliminary trial has shown that ginkgo can reduce sexual problems caused by antidepressants like fluoxetine (Prozac®), bupropion (Wellbutrin®), venlafaxine (Effexor®), and nefazodone (Serzone®) in men and women.[97] Double-blind trials are now needed to determine whether ginkgo is truly effective for this purpose.

Damiana has traditionally been used to treat people with depression. Yohimbine (the active component of the herb Yohimbe) inhibits monoamine oxidase (MAO) and therefore may be beneficial in depressive disorders. However, clinical research has not been conducted for its use in treating depression.

Pumpkin seeds contain L-tryptophan, and for this reason have been suggested to help remedy depression. However, research is needed before pumpkin seeds can be considered for this purpose. It is unlikely the level of L-tryptophan in pumpkin seeds would be sufficient to relieve depression.

Vervain is a traditional herb for depression; however, there is no research to validate this use.

Holistic approaches that may be helpful

Acupuncture may improve depression by affecting the synthesis of neurotransmitters that control mood. Controlled trials have found electro-acupuncture (acupuncture accompanied by electrical currents) equally effective as antidepressant drug therapy without causing side effects. However, a controlled trial found that both real and fake acupuncture improved depression equally well compared to no treatment. It is well known that placebo effects are common in the treatment of depression, so more controlled trials are needed before accepting the usefulness of acupuncture for depression.

Many people who are depressed seek counselling with a psychologist, social worker, psychiatrist, or other form of counsellor. An analysis of four properly conducted trials of severely depressed patients comparing the effects of one form of counselling intervention, cognitive behaviour therapy, with the effects of antidepressant drugs was published in 1999. In that report, cognitive behaviour therapy was at least as effective as drug therapy. While the outcome of counselling may be more variable than outcomes from drug or natural substance interventions, many healthcare professionals consider counselling an important part of recovery for depression not due to identifiable biochemical causes.

A rhythmic breathing technique called Sudarshan Kriya Yoga (SKY) may be an effective alternative to antidepressant drugs as an initial treatment for people with clinical depression. In a controlled trial, daily 45-minute SKY sessions six days per week produced a 67% remission rate among people with a diagnosis of depression. This effect compared favourably with the effects of electro-shock therapy and the antidepressant drug imipramine; however, no placebo was used in this study. SKY technique is taught by the Art of Living Foundation.

In a controlled trial, magnetic stimulation to the front of the skull and underlying brain produced modest reductions of depressive symptoms in depressed people who had not responded adequately to standard treatment. The procedure was performed by

psychiatrists using sophisticated electromagnetic medical equipment, not a simple magnet.

Diarrhoea

Diarrhoea is any attack of frequent, watery stools.

Diarrhoea can be triggered by many different conditions. Acute diarrhoea is often caused by an infection and may require medical management. The primary role of nutrition in acute diarrhoea is to prevent depletion of fluid, sodium, potassium, and calories. Replenishment of all four has been achieved with “rehydration solutions” and with a variety of foods, from salted carrot soup to peeled scraped apple to rice gruel. However, diarrhoea severe enough to necessitate the use of rehydration solutions requires direct medical supervision. Therefore, nutritional approaches to overcoming depletion of fluid, sodium, potassium, and calories are not discussed here, but rather should be discussed with a doctor. Diarrhoea-induced low blood sugar, dehydration, or electrolyte imbalance can be serious or even life-threatening, particularly if prolonged in children.

A healthcare provider should be consulted if diarrhoea continues for more than a few days, as it may indicate a more serious health condition. Diarrhoea alternating with constipation may be a sign of irritable bowel syndrome (IBS).

What are the symptoms of diarrhoea?

Normal bowel habits vary considerably from person to person depending on age, diet, cultural factors, and individual physiology. However, loose watery stools occurring three or more times in one day is generally considered abnormal. In some instances, diarrhoea may be accompanied by cramping abdominal pain, nausea, vomiting, fever, loss of appetite, and bloody or foul-smelling stools.

Dietary changes that may be helpful

Some foods contain sugars that are absorbed slowly, such as fructose in fruit juice or sorbitol in dietetic confectionery. Through a process called osmosis, these unabsorbed sugars hold onto water in the intestines, sometimes leading to diarrhea. By reading labels, people with chronic non-infectious diarrhoea can easily avoid fruit juice, fructose, and sorbitol to see if this eliminates the problem.

People who are lactose intolerant—meaning they lack the enzyme needed to digest milk sugar—often develop diarrhoea after consuming milk or ice cream. People whose lactose intolerance is the cause of diarrhoea will rid themselves of the problem by avoiding milk and ice cream or in many cases by taking lactase, the enzyme needed to digest lactose. Lactase is available in a variety of forms in pharmacies (and in grocery stores in the form of lactase-treated milk).

Large amounts of vitamin C or magnesium found in supplements can also cause diarrhoea, although the amount varies considerably from person to person. Unlike infectious diarrhoea, diarrhoea caused by high amounts of vitamin C or magnesium is not generally accompanied by other signs of illness. The same is true when the problem comes from sorbitol or fructose. In these cases, avoiding the offending supplement or food brings rapid relief.

Drinking several cups of coffee per day causes diarrhoea in some people. People with chronic diarrhoea who drink coffee should avoid all coffee for a few days to evaluate whether coffee is the culprit.

Allergies and food sensitivities are common triggers for diarrhoea. For example, some infants suffer diarrhoea when fed cow's milk-based formula but improve when switched to soy-based formula. People with chronic diarrhoea not attributable to other causes should discuss the possibility of food sensitivity with a doctor.

Some doctors recommend a diet called the BRAT diet for acute bouts of diarrhoea. BRAT stands for bananas, rice, apples and toast. These foods are mild, well-tolerated and good sources of fibre, potassium and other nutrients that may be helpful in diarrhoea. The efficacy of this diet has not been evaluated in clinical trials.

Nutritional supplements that may be helpful

An organism related to brewer's yeast, Saccharomyces boulardii (Sb), is widely used in Europe to prevent antibiotic-induced diarrhoea. It is also available as a supplement in the United States. Animal research with Sb shows interference with Clostridium difficile, a common bacterial cause of diarrhoea. In double-blind trials, Sb has prevented antibiotic-induced and other forms of infectious diarrhoea. An intake of 500 mg four times per day has been used in some of this research. Sb has also helped tourists prevent traveller's diarrhoea, according to double-blind research. In one trial, positive results were obtained at amounts as low as 150–450 mg per day. Even diarrhoea caused by Crohn's disease has partially responded to Sb supplementation in double-blind research.[11] While not every trial shows efficacy, the preponderance of evidence clearly supports the use of Sb in people with diarrhoea caused by antibiotics or infection. Seriously ill patients should consult with their doctor before supplementing with Sb, as rare but serious cases of infection caused by Sb in such patients has been reported.

Beneficial bacteria, such as lactobacilli and bifidobacteria, normally live in a healthy colon, where they inhibit the over-growth of disease-causing bacteria. Diarrhoea flushes intestinal microorganisms out of the digestive tract, leaving the body vulnerable to opportunistic infections. Replenishing with acidophilus and other beneficial probiotic bacteria can help resolve the diarrhoea and prevent new infections. The effective amount of probiotic bacteria depends on the strain used, as well as the concentration of viable organisms.

The combination of bifidobacteria and Strep thermophilus (found in certain yogurts) dramatically reduces the incidence of acute diarrhoea in hospitalized children. Active-culture yogurt, milk fermented with Lactobacillus casei and other sources of probiotic bacteria may prevent antibiotic-induced diarrhoea.

As mentioned in the dietary changes section above, if lactose intolerance is the cause of diarrhoea, supplemental use of lactase prior to consuming milk or milk-containing products can be helpful. Cheese rarely has enough lactose to cause symptoms in lactose-intolerant people. Lactase products are available that can be chewed while drinking milk or added to milk directly.

The malabsorption problems that develop during diarrhoea can lead to deficiencies of many vitamins and minerals. For this reason, it makes sense for people with diarrhoea to take a multivitamin-mineral supplement. Two of the nutrients that may not be absorbed

efficiently as a result of diarrhoea are zinc and vitamin A, both needed to fight infections. In third world countries, supplementation with zinc and vitamin A has led to a reduction in, or prevention of, infectious diarrhoea in children. Whether such supplementation would help people in better nourished populations remains unclear.

Brewer's yeast supplementation has been shown to alter immune function and the flora living in the intestine, and may relieve infectious diarrhoea. Three capsules or tablets of brewer's yeast three times per day for two weeks was reported to improve three cases of infectious diarrhoea caused by Clostridium difficile. Animal research has confirmed that brewer's yeast helps fight this unfriendly bacterium. (Note that real brewer's yeast is not identical to nutritional, or torula, yeast and that when asking for "brewer's yeast" in health food stores, people are often directed toward these other products. Real brewer's yeast is bitter, whereas other health food store yeasts have a more pleasant taste.)

Colostrum might be useful for certain types of infectious diarrhoea. In a double-blind trial, children with diarrhoea caused by a rotavirus were treated with immunoglobulins extracted from colostrum derived from cows immunized with rotavirus. Compared with the placebo, colostrum extract significantly reduced the amount of diarrhoea and the amount of oral rehydration solution required. The rotavirus was eliminated from the stool significantly more rapidly in the colostrum group than in the placebo group (1.5 days, vs. 2.9 days).

In addition to a positive effect against acute rotavirus diarrhoea, there is also evidence that specific forms of colostrum (derived from specially immunized cows or those with confirmed presence of specific antibodies) are effective against diarrhoea caused by Cryptosporidium parvum, Helicobacter pylori, Escherichia coli, and Clostridium difficile. However, it is not known whether commercially-available colostrum provides significant amounts of the specific immunoglobulins that are active against these organisms. Furthermore, unless the immunoglobulins are present in high enough concentrations, the preparation is not likely to be effective.

While fibre from dietary or herbal sources is often useful for constipation, it may also play a role in alleviating diarrhoea.

Acute diarrhoea can damage the lining of the intestine. Folic acid can help repair this damage. In one preliminary trial, supplementing with very large amounts of folic acid (5 mg three times per day for several days) shortened the duration of acute infectious diarrhoea by 42%. However, a double-blind trial failed to show any positive effect with the same level of folic acid. Therefore, evidence that high levels of folic acid supplementation will help people with infectious diarrhoea remains weak.

It is known vitamin A supplements support immune function and prevent infections. This is true, however, only under some circumstances. Vitamin A supplementation can also increase the risk of infections, according to the findings of a double-blind trial. In a study of African children between six months and five years old, a 44% reduction in the risk of severe diarrhoea was seen in those children given four 100,000–200,000 IU supplements of vitamin A (the lower amount for those less than a year old) during an eight-month period. On further investigation, the researchers discovered that the reduction in diarrhoea occurred only in children who were very malnourished. For children who were not starving, vitamin A supplementation actually increased the risk of diarrhoea compared with the placebo group. The vitamin A-supplemented children also

had a 67% increased risk of coughing and rapid breathing, and signs of further lung infection, although this problem did not appear in children infected with the AIDS virus. These findings should be of concern to American parents, whose children are not usually infected with HIV or severely malnourished. Such relatively healthy children fared poorly in the African trial in terms of both the risk of diarrhoea and the risk of continued lung problems. Vitamin A provided no benefit to the well-nourished kids. Therefore, it makes sense not to give vitamin A supplements to children unless there is a special reason to do so, such as the presence of a condition causing malabsorption (e.g., celiac disease).

Herbs that may be helpful

The following recommendations are for milder forms of diarrhoea. For more serious cases of diarrhoea, proper medical evaluation and monitoring should occur before taking any herbal supplements.

Carob is rich in tannins that have an astringent or binding effect on the mucous membranes of the intestinal tract. A double-blind trial has suggested it may be particularly useful for young children and infants with diarrhoea. Some healthcare professionals recommend 15 grams of carob powder is mixed with applesauce (for flavour) when given to children. Carob can also be used for treating adult diarrhoea.

While fibre from dietary or herbal sources is often useful for constipation, it may also play a role in alleviating diarrhoea. For example, 9–30 grams per day of psyllium seed (an excellent source of fibre) makes stool more solid and can help resolve symptoms of non-infectious diarrhoea. Alginic acid, one of the major constituents in bladderwrack(Fucus vesiculosus), is a type of dietary fibre and as a result may potentially help relieve diarrhoea. However, human studies have not been done on how effective bladderwrack is for this condition.

An extract from stem bark latex of Sangre de drago (Croton lechleri), an herb from the Amazon basin of Peru, has demonstrated significant anti-diarrhoeal activity in preliminary and double-blind trials. Double-blind research has demonstrated the extract's effectiveness for traveller's diarrhoea, non-specific diarrhoea, and diarrhoea associated with HIV infection and AIDS. For traveller's diarrhoea and non-specific diarrhoea, amounts ranging from 125 mg to 500 mg taken four times daily for two days have proven effective. However, in one trial, only the 125 mg four times daily amount (but not higher amounts) was effective for acute non-specific diarrhoea. The reasons for the failure of higher amounts in this study is not known. Very high amounts of these extracts (350–700 mg four times daily for seven or more days) were used in the trials involving people with HIV and AIDS. Such levels of supplementation should always be supervised by a doctor. Most of this research on Sangre de Drago is unpublished, and much of it is derived from manufacturers of the formula. Further double-blind trials, published in medical journals, are needed to confirm the efficacy reported in these studies.

Tormentil root (Potentilla tormentilla) is an herb that has been used for many years in different European folk medicines for the treatment of diarrhoea. In a double-blind study of children with diarrhoea caused by rotavirus infection, the duration of diarrhoea averaged three days in children who received tormentil root extract, compared with five days in those who received a placebo. No adverse effects were seen. The amount of tormentil root extract used was 3 drops for every year of life, taken three times a day until diarrhoea stopped, or for a maximum of five days.

Other astringent herbs traditionally used for diarrhoea include blackberry leaves, blackberry root bark, blueberry leaves, and red raspberry leaves. Raspberry leaves are high in tannins and, like blackberry, may relieve acute diarrhoea. A close cousin of the blueberry, bilberry, has been used traditionally in Germany for adults and children with diarrhoea. Only dried berries or juice should be used—fresh berries may worsen diarrhoea.

Cranesbill has been used by several of the indigenous tribes of North America to treat diarrhoea. The tannins in cranesbill likely account for the anti-diarrhoeal activity — although there has been little scientific research to clarify cranesbill's constituents and actions.

In laboratory experiments, a tannin in oak, known as ellagitannin, inhibited intestinal secretion, which may help resolve diarrhoea. Oak is well regarded in Germany, where it is recommended (along with plenty of electrolyte-containing fluids) to treat mild, acute diarrhoea in children.
Due to of its supposed antimicrobial activity, goldenseal has a long history of use for infectious diarrhoea. Its major alkaloid, berberine (also found in barberry and Oregon grape), has been shown to improve infectious diarrhoea in some double-blind trials. Negative studies have generally focused on people with cholera, while positive studies investigated viral diarrhoea or diarrhoea due to strains of E. coli. These studies generally used 400–500 mg berberine one to three times per day. Because of the low amount of berberine in most goldenseal products, it is unclear how effective the whole root or root extracts would be in treating diarrhoea.

Chamomile may reduce intestinal cramping and ease the irritation and inflammation associated with diarrhoea, according to test tube studies. Chamomile is typically taken as a tea. Many doctors recommend dissolving 2–3 grams of powdered chamomile or adding 3–5 ml of a chamomile liquid extract to hot water and drinking it three or more times per day, between meals. Two to three teaspoons (10–15 grams) of the dried flowers can be steeped in a cup of hot water, covered, for ten to fifteen minutes as well.
Tylophora has been used traditionally in the Ayurvedic system for diarrhoea probably due to its anti-inflammatory and antimicrobial actions, although human studies have not confirmed this use.

Herbs high in mucilage, such as marshmallow or slippery elm, may help reduce the irritation to the walls of the intestinal tract that can occur with diarrhoea. A usual amount taken is 1,000 mg of marshmallow extract, capsules, or tablets three times per day. Marshmallow may also be taken as a tincture in the amount of 5–15 ml three times daily.
Sweet annie has been used traditionally to treat infectious diarrhoea and malaria. However, more modern studies have used the isolated constituent artemisinin and it is unclear how effective the herb is in managing diarrhoea.

Holistic approaches that may be helpful

Other integrative approaches that may be helpful: Acupuncture may be useful for the treatment of diarrhoea, particularly in infants. A preliminary study of acupuncture treatment in 1,050 cases of infantile diarrhoea found 95% were relieved with one to three treatments. Similar results have been reported in other preliminary trials and case reports. A controlled trial of acupuncture for the treatment of infantile diarrhoea compared scalp acupuncture or traditional body acupuncture with drug therapy, primarily

antibiotics. The cure rate for scalp and body acupuncture was significantly higher (90% and 89%) than that of drug treatment (46%).

Ear Infections

Many children suffer recurrent infections of the middle ear, a condition also known as otitis media (OM).

What are the symptoms of recurrent ear infections?

Ear infections can cause irritability, difficulty sleeping, runny nose, fever, fluid draining from the ear, loss of balance, mild to severe ear pain, and hearing difficulty. Untreated infections can cause permanent hearing impairment and can also spread to other parts of the head, including the brain. Frequent or persistent ear infections in children can reduce their hearing when normal hearing is critical for speech and language development.

Dietary changes that may be helpful

The incidence of allergy among children with recurrent ear infections is much higher than among the general public. In one study, more than half of all children with recurrent ear infections were found to be allergic to foods. Removing those foods led to significant improvement in 86% of the allergic children tested. Other reports show similar results. In one preliminary study, children who were allergic to cow's milk were almost twice as likely to have recurrent ear infections as were children without the allergy. People with recurrent ear infections should discuss allergy diagnosis and elimination with a doctor.

Although sugar intake has not been studied in relation to recurrent ear infections, eating sugar is known to impair immune function. Therefore, some doctors recommend that children with recurrent ear infections reduce or eliminate sugar from their diets.

Xylitol, a natural sugar found in some fruits, interferes with the growth of some bacteria that may cause ear infections. In double-blind research, children who chewed gum sweetened with xylitol had a reduced risk of ear infections.

Lifestyle changes that may be helpful

When parents smoke, their children are more likely to have recurrent ear infections. It is important that children are not exposed to passive smoke.

Humidifiers are sometimes used to help children with recurrent ear infections, and animal research has supported this approach. Nonetheless, human research studying the effect of humidity on recurrent ear infections has yet to conclusively show that use of humidifiers is of significant benefit.

Use of pacifiers in infants increases the risk of ear infections.

Nutritional supplements that may be helpful

Vitamin C supplementation has been reported to stimulate immune function. As a result, some doctors recommend between 500 mg and 1,000 mg of vitamin C per day for people with ear infections. Nonetheless, vitamin C supplementation has not been studied by itself in people with ear infections.

Zinc supplements have also been reported to increase immune function. As a result, some doctors recommend zinc supplements for people with recurrent ear infections, suggesting 25 mg per day for adults and lower amounts for children. For example, a 30-pound child might be given 5 mg of zinc per day while suffering from OM. Nonetheless, zinc supplementation has not been studied in people with ear infections.

Herbs that may be helpful

Echinacea has been reported to support healthy short-term immune response. As a result, it has been suggested that some children with recurrent ear infections may benefit from 1–2 ml (depending on age) of Echinacea tincture taken three times per day or more. Doctors who use Echinacea suggest that supplementation be started as soon as symptoms start to appear and continued until a few days after they are gone. Nonetheless, research has not been done to determine whether Echinacea supplementation either reduces symptoms or prevents recurrence of ear infections.

Ear drops with mullein, St. John's Wort, and garlic in an oil or glycerine base are traditional remedies used to alleviate symptoms, particularly pain, during acute ear infections. No clinical trials have investigated the effects of these herbs in people with ear infections. Moreover, oil preparations may obscure a physician's view of the ear drum and should only be used with a healthcare professional's directions.

An unpublished clinical trial of children with colds found that linden tea, aspirin, and bed rest were more effective than antibiotics at speeding recovery and reducing complications such as ear infection. (Aspirin is no longer given to children due to the threat of Reye's syndrome.) However, no research has yet confirmed the use of linden for preventing ear infections.

Eczema

Eczema is a common inflammatory condition of the skin.

Many skin diseases cause symptoms similar to those of eczema, so it is important to have the disease properly diagnosed before it is treated.

What are the symptoms of eczema?

Eczema is characterized by scaling, thickened patches of skin that can become red and fissured. It may also appear as tiny blisters (called vesicles) that rupture, weep, and crust over. The most troublesome and prevalent symptom of eczema is itching, which may be constant.

Dietary changes that may be helpful

Eczema can be triggered by allergies. Most children with eczema have food allergies, according to data from double-blind research. A doctor should be consulted to determine whether allergies are a factor. Once the trigger for the allergy has been identified, avoidance of the allergen can lead to significant improvement. However, "classical" food allergens (e.g., cows' milk, egg, wheat, soy, and nuts) are often not the cause of eczema in adults. A variety of substances have been shown, in a controlled trial, to trigger eczema reactions in susceptible individuals; avoidance of these substances has similarly been shown to improve the eczema. Triggers included food additives, histamine, salicylates, benzoates, and other compounds (such as aromatic compounds) found in fruits, vegetables, and spices. These reactions do not represent true food allergies but

are instead a type of food sensitivity reaction. The authors of this study did not identify which substances are the most common triggers.

It has been reported that when heavy coffee drinkers with eczema avoided coffee, eczema symptoms improved. In this study, the reaction was to coffee, not caffeine, indicating that some people with eczema may be allergic to coffee. People with eczema who are using a hypoallergenic diet to investigate food allergies should avoid coffee as part of this trial.

Nutritional supplements that may be helpful

Researchers have reported that people with eczema do not have the normal ability to process fatty acids, which can result in a deficiency of gamma-linolenic acid (GLA).[7] GLA is found in evening primrose oil (EPO), borage oil, and black currant seed oil. Some, but not all, double-blind trials have shown that EPO is useful in the treatment of eczema. An analysis of nine trials reported that the effects for reduced itching were most striking. Much of the research uses 12 pills per day; each pill contains 500 mg of EPO, of which 45 mg is GLA. Smaller amounts have been shown to lack efficacy.
Supplementation with borage oil, another source of GLA, has led to reductions in skin inflammation, dryness, scaliness, and itch in eczema patients in some, but not all, preliminary or double-blind trials.

Many years ago, use of large amounts of vegetable oil (containing precursors to GLA) was reported to help treat people with eczema, but these studies were not controlled and do not meet modern standards of research.

Ten grams of fish oil providing 1.8 grams of EPA (eicosapentaenoic acid) per day were given to a group of eczema sufferers in a double-blind trial. After 12 weeks, those using the fish oil experienced significant improvement. According to the researchers, fish oil may be effective because it reduces levels of leukotriene B4, a substance that has been linked to eczema. The eczema-relieving effects of fish oil may require taking ten pills per day for at least 12 weeks. Smaller amounts of fish oil have been shown to lack efficacy.
One trial using vegetable oil as the placebo reported that fish oil was barely more effective than the placebo (30% vs. 24% improvement). As vegetable oil had previously been reported to have potential therapeutic activity, the apparent negative outcome of this trial should not dissuade people with eczema from considering fish oil.

Although supplementation with 400 IU of vitamin E per day has been reported in anecdotal accounts to alleviate eczema, research has not supported this effect. Moreover, rare cases of topical vitamin E potentially causing eczema have appeared. People with eczema should not expect vitamin E to be helpful with their condition.

A double-blind trial reported that use of a hypoallergenic infant formula plus probiotics (500 million organisms of Lactobacillus GG bacteria per gram of formula, taken for one month) initially led to improvement in eczema symptoms in infants with suspected allergy to cows' milk. However, by the end of two months, both the group receiving Lactobacillus GG and the placebo group had improved approximately the same amount. In the same report, a preliminary trial giving 20 billion Lactobacilli twice per day to breast-feeding mothers led to significant improvement of their allergic infants' eczema after one month. Probiotics may reduce allergic reactions by improving digestion, by helping the intestinal tract control the absorption of food allergens, and/or by changing immune system responses.

In 1989, Medical World News reported that researchers from the University of Texas found that vitamin C, at 50–75 mg per 2.2 pounds of body weight, reduced symptoms of eczema in a double-blind trial. In theory, vitamin C might be beneficial in treating eczema by affecting the immune system, but further research has yet to investigate any role for this vitamin in people with eczema.

Herbs that may be helpful

The table below summarizes the three categories of herbs used for people with eczema: anti-inflammatories and herbs that affect the immune system (immunomodulators), astringents (herbs that bind fluids and exudates), and herbs that affect the liver (also called alternatives). Alterative herbs are poorly researched. Astringents are only helpful if applied topically when weeping eczema is present; they will not help people with dry eczema.

Zemaphyte®, a traditional Chinese herbal preparation that includes liquorice as well as nine other herbs, has been successful in treating childhood and adult eczema in double-blind trials. One or two packets of the combination is mixed in hot water and taken once per day. Because one study included the same amount of liquorice in both the placebo and the active medicine, it is unlikely that liquorice is the main active component of Zemaphyte®.

Several Chinese herbal creams for eczema have been found to be adulterated with steroids. The authors of one study found that 8 of 11 Chinese herbal creams purchased without prescription in England contained a powerful steroid drug used to treat inflammatory skin conditions.

A cream prepared with witch hazel and phosphatidylcholine has been reported to be as effective as 1% hydrocortisone in the topical management of eczema, according to one double-blind trial.

Topical applications of chamomile have been shown to be moderately effective in the treatment of eczema. One trial found it to be about 60% as effective as 0.25% hydrocortisone cream.

Onion injections into the skin and topical onion applications have been shown to inhibit skin inflammation in people with eczema, according to one double-blind trial. The quantity or form of onion that might be most effective is unknown.

A Japanese topical ointment called Shiunko has been reported to help improve symptoms of eczema, according to preliminary research. The ointment contains sesame oil and four herbs (Lithospermum radix, Angelica radix, Cera alba and Adeps suillus) and was applied twice daily along with petrolatum and 3.5% salt water for three weeks. Clinical improvement was seen in four of the seven people using Shiunko.

Topical preparations containing calendula, chickweed, or oak bark have been used traditionally to treat people with eczema but none of these has been studied in scientific research focusing on people with eczema.

Burdock, sarsaparilla, red clover, and wild oats have been used historically to treat people with eczema, but without scientific investigation.

Holistic approaches that may be helpful

Numerous trials have reported that hypnosis improves eczema in children and adults.[44] A preliminary trial emphasizing relaxation, stress management, and direct suggestion in hypnosis showed reduced itching, scratching, and sleep disturbance, as well as reduced requirements for topical corticosteroids. All of the patients studied had been resistant to conventional treatment.

Erectile Dysfunction

Erectile dysfunction (ED) is the inability of a male to attain or sustain an erection sufficient for sexual intercourse.

It can be a persistent condition; however, almost half of all men experience ED only occasionally. ED can have physical, psychological, or drug-induced causes. Although some doctors used to believe differently, most researchers and doctors now believe that physical factors are responsible for the majority of ED cases.
Several conditions may contribute to ED by impairing blood flow to the penis. These include atherosclerosis, diabetes, hypothyroidism, multiple sclerosis, and chronic alcohol abuse.

What are the symptoms of erectile dysfunction?

ED is defined by the symptoms listed above. Symptoms may also include loss of sexual desire (libido), premature ejaculation, or inability to achieve orgasm.

Lifestyle changes that may be helpful

Men who smoke have been shown to have an increased incidence of ED.

Nutritional supplements that may be helpful

Low blood levels of the hormone dehydroepiandrosterone (DHEA) have been reported in some men with ED. In one double-blind trial, 40 men with low DHEA levels and ED were given 50 mg DHEA per day for six months. Significant improvement in both erectile function and interest in sex occurred in the men assigned to take DHEA, but not in those assigned to take placebo. No significant change occurred in testosterone levels or in factors that could affect the prostate gland. Experts have concerns about the safe use of DHEA, particularly because long-term safety data do not exist.

Dilation of blood vessels necessary for a normal erection depends on a substance called nitric oxide, and nitric oxide formation depends on the amino acid arginine. In a preliminary trial, men with ED were given 2,800 mg of arginine per day for two weeks. Six of the 15 men in the trial were helped, though none improved while taking placebo. In a larger double-blind trial, men with ED were given 1,670 mg of arginine per day or a matching placebo for six weeks. Arginine supplementation was found to be particularly effective at improving ED in men with abnormal nitric oxide metabolism. Although little is known about how effective arginine will be for men with ED or which subset of these men would be helped, available research looks promising and suggests that at least some men are likely to benefit.

In a double-blind study of men with erectile dysfunction, supplementation with 120 mg per day of Pycnogenol®, an extract of the bark of a certain tree (Pinus pinaster), improved erectile function, whereas placebo treatment had no effect.

Herbs that may be helpful

Yohimbine (the primary active constituent in Yohimbe) has been shown in several double-blind trials to help treat men with ED; negative results have also been reported, however. Yohimbe dilates blood vessels and may help, regardless of the cause of ED. A tincture of Yohimbe bark is often used in the amount of 5 to 10 drops three times per day. Standardized Yohimbe extracts are also available. A typical daily amount of Yohimbine is 15 to 30 mg. It is best to use Yohimbe and Yohimbine under the supervision of a physician.

Asian ginseng (Panax ginseng) has traditionally been used as a supportive herb for male potency. A double-blind trial found that 1,800 mg per day of Asian ginseng extract for three months helped improve libido and the ability to maintain an erection in men with ED. The benefit of Asian ginseng confirmed in another double-blind study, in which 900 mg three times a day was given for eight weeks.

Ginkgo Biloba may help some men with ED by increasing blood flow to the penis. One double-blind trial found improvement in men taking 240 mg per day of a standardized Ginkgo Biloba extract (GBE) for nine months. A preliminary trial, involving 30 men who were experiencing ED as a result of medication use (selective serotonin reuptake inhibitors and other medications), found that approximately 200 mg per day of GBE had a positive effect on sexual function in 76% of the men.

Damiana (Turnera diffusa) is a traditional herbal treatment for men with ED. However, no modern clinical trials have confirmed its effectiveness.

Holistic approaches that may be helpful

ED that cannot be linked to physical causes has been successfully treated by hypnosis. In one trial, three hypnosis sessions per week, later decreased to one per month, over a six-month period led to improvement in 75% of men in the trial.

Acupuncture might be of some benefit for men with ED. Electroacupuncture, which is acupuncture accompanied by electrical stimulation, was performed on various acupuncture points in men with ED in a preliminary trial of men with this condition. Two treatments were administered every week for one month. An improvement in quality of erection was observed in 15% of the participants and an increase in sexual activity was reported by 31% of the men. Another preliminary trial found good results in over half of the men treated, but the only controlled trial of electroacupuncture for ED found that placebo also produced a large improvement in sexual function—an effect similar to that of acupuncture. Controlled trials with larger groups of men are necessary to better test the efficacy of acupuncture therapy for men suffering from ED.

Fatigue

Chronic fatigue syndrome (CFS) is disabling fatigue lasting more than six months that reduces activity by more than half. CFS is a poorly understood disease involving many body systems. No single cause of CFS has been identified, therefore, it is diagnosed by symptoms and by ruling out other known causes of fatigue by a healthcare practitioner.
Suggested causes include chronic viral infections, food allergy, adrenal gland dysfunction, and many others. None of these have been convincingly documented in more than a minority of sufferers. In some people there is also difficulty sleeping, swollen

lymph nodes, and/or mild fever. When there is muscle soreness, fibromyalgia may be the actual problem. Although CFS is considered a modern diagnosis, it may have existed for centuries under other names, such as “the vapours,” neurasthenia, “effort syndrome” (diagnosed in World War I veterans), hypoglycaemia, and chronic mononucleosis.

What are the symptoms of chronic fatigue syndrome?

In addition to fatigue, there may also be muscle pain, joint pain not associated with redness or swelling, short-term memory loss, and an inability to concentrate. Some people with chronic fatigue syndrome also experience difficulty sleeping, swollen lymph nodes, and/or mild fever.

Dietary changes that may be helpful

Some doctors believe that people with CFS who have low blood pressure should not restrict their salt intake. Among CFS sufferers who have a form of low blood pressure triggered by changes in position (orthostatic hypotension), some have been reported in a preliminary study to be helped by additional salt intake.[1] People with CFS considering increasing salt intake should consult a doctor before making such a change. (See the Herb information, below, for more information on blood pressure and CFS.)

Lifestyle changes that may be helpful

Exercise is important to prevent the worsening of fatigue. Many people report feeling better after undertaking a moderate exercise plan. However, most people with CFS are sensitive to overexertion, and excessive exercise may lead to consistently worsening fatigue and mental functioning. Exercise should be attempted gradually, starting with very small efforts. One small study found that intermittent exercise, in which patients walked for three minutes followed by three minutes of rest for a total of 30 minutes, did not exacerbate their CFS symptoms.

Nutritional supplements that may be helpful

The combination of potassium aspartate and magnesium aspartate has shown benefits for chronically fatigued people in double-blind trials. However, these trials were performed before the criteria for diagnosing CFS was established, so whether these people were suffering from CFS is unclear. Usually 1 gram of aspartates is taken twice per day, and results have been reported within one to two weeks.

Vitamin B12 deficiency may cause fatigue. However, some reports, even double-blind ones, have shown that people who are not deficient in B12 have increased energy following a series of vitamin B12 injections. Some sources in conventional medicine have discouraged such people from taking B12 shots despite this evidence. Nonetheless, some doctors have continued to take the limited scientific support for B12 seriously. In one preliminary trial, 2,500 to 5,000 mcg of vitamin B12 given by injection every two to three days led to improvement in 50 to 80% of a group of people with CFS; most improvement appeared after several weeks of B12 shots.[16] While the research in this area remains preliminary, people with CFS considering a trial of vitamin B12 injections should consult a doctor. Oral or sublingual B12 supplements are unlikely to obtain the same results as injectable B12, because the body’s ability to absorb large amounts is relatively poor.

A preliminary trial has shown that people with CFS have reduced functional B-vitamin status when compared to people without the condition. The functional vitamin deficiency seen in this study was most pronounced for vitamin B6. Double-blind trials are needed to

establish whether B-vitamin supplementation is effective in people with chronic fatigue syndrome.

L-carnitine is required for energy production in the powerhouses of cells (the mitochondria). There may be a problem in the mitochondria in people with CFS. Deficiency of carnitine has been seen in some CFS sufferers. One gram of carnitine taken three times daily for eight weeks led to improvement in CFS symptoms in one preliminary trial.

NADH (nicotinamide adenine dinucleotide) helps make ATP, the energy source the body runs on. In a double-blind trial, people with CFS received 10 mg of NADH or a placebo each day for four weeks. Of those receiving NADH, 31% reported improvements in fatigue, decreases in other symptoms, and improved overall quality of life, compared with only 8% of those in the placebo group. Further double-blind research is needed to confirm these findings.
Magnesium levels have been reported to be low in CFS sufferers. In a double-blind trial, injections with magnesium improved symptoms for most people. Oral magnesium supplementation has improved symptoms in those people with CFS who previously had low magnesium levels, according to a preliminary report, although magnesium injections were sometimes necessary. These researchers report that magnesium deficiency appears to be very common in people with CFS. Nonetheless, several other researchers report no evidence of magnesium deficiency in people with CFS. The reason for this discrepancy remains unclear. If people with CFS do consider magnesium supplementation, they should have their magnesium status checked by a doctor before undertaking supplementation. It appears that only people with magnesium deficiency benefit from this therapy.

Dehydroepiandrosterone, more commonly known as DHEA, is a hormone now available as a supplement. In one report, DHEA levels were found to be low in people with CFS. Another research group reported that, while DHEA levels were normal in a group of CFS patients, the ability of these people to increase their DHEA level in response to hormonal stimulation was impaired.[27] Whether supplementation with DHEA might help CFS patients remains unknown due to the lack of controlled research. DHEA should not be used without the supervision of a healthcare professional.

Herbs that may be helpful

Some research suggests that CFS may be partially due to low adrenal function resulting from different stressors (e.g., mental stress, physical stress, and even viral illness) and impacting the normal communication between the hypothalamus, pituitary gland, and the adrenal glands. Liquorice root is known to stimulate the adrenal glands and to block the breakdown of active cortisol in the body. One case report described a man with CFS whose symptoms improved after taking 2.5 grams of liquorice root daily. While there have been no controlled trials to test liquorice in patients with CFS, it may be worth a trial of six to eight weeks using 2 to 3 grams of liquorice root daily.

Adaptogenic herbs such as Asian ginseng and eleuthero may also be useful for CFS patients—the herbs not only have an immunomodulating effect but also help support the normal function of the hypothalamic-pituitary-adrenal axis, the hormonal stress system of the body. These herbs are useful follow-ups to the six to eight weeks of taking liquorice root and may be used for long-term support of adrenal function in people with CFS.

However, no controlled research has investigated the effect of adaptogenic herbs on CFS.

Holistic approaches that may be helpful

Highly stressful situations should be avoided by people with CFS. Coping mechanisms for dealing with stress can sometimes be maximized by behavioural therapy, which has been shown helpful for people with CFS in several controlled studies.

Female Infertility

Infertility is defined by doctors as the failure to become pregnant after a year of unprotected intercourse.

It can be caused by sex-hormone abnormalities, low thyroid function, endometriosis, scarring of the tubes connecting the ovaries with the uterus, or a host of other factors. Some of the causes of infertility readily respond to natural medicine, while others do not. The specific cause of infertility should always be diagnosed by a physician before considering possible solutions.

What are the symptoms of infertility?

For most infertile women, no symptoms accompany the infertility. Some women with symptoms of obesity, acne, and excessive facial hair; heavy, irregular, or absent menstrual periods; or fluid leaking from the breasts could have hormone imbalances that might interfere with fertility.

Dietary changes that may be helpful

Consumption of one to one and a half cups of coffee per day in one study and about three or four cups per day in other studies has been associated with delayed conception in women trying to get pregnant. Caffeine consumption equivalent to more than two cups of coffee per day has been associated with an increased incidence of infertility due to tubal disease or endometriosis. In another study, women who consumed more than one cup of coffee per day had a 50% reduction in fertility, compared with women who drank less coffee.

Caffeine is found in regular coffee, black tea, green tea, some soft drinks, chocolate, cocoa, and many over-the-counter pharmaceuticals. While not every study finds that caffeine reduces female fertility, many doctors recommend that women trying to get pregnant avoid caffeine.

In one study, consumption of three cups of decaffeinated coffee per day was associated with an increased risk of spontaneous abortion. In another study, caffeine consumption compounded the negative effects of alcohol consumption on female fertility. Some researchers suspect that the tannic acid found in any kind of coffee and black tea may contribute to infertility.

Consumption of fish contaminated with polychlorinated biphenyls (PCBs) may reduce the ability of women to conceive. In one study, women who ate more than one fish meal per month of fish caught in Lake Ontario (known to be contaminated with PCBs) had reduced fecundity (meaning that it took longer for them to become pregnant) compared to women who ate less contaminated fish.

Lifestyle changes that may be helpful

The more women smoke, the less likely they are to conceive. In fact, women whose mothers smoked during their pregnancy are less likely to conceive compared with those whose mothers were non-smokers. Quitting smoking may enhance fertility.

Even moderate drinking of alcoholic beverages by women is linked to an increased risk of infertility in some, although not all, research. In a preliminary study, there was a greater than 50% reduction in the probability of conception in a menstrual cycle during which participants consumed alcohol. Caffeine appeared to enhance alcohol's negative effect in this study. Women who abstained from alcohol and consumed less than one cup of coffee per day were more than twice as likely to conceive (26.9 pregnancies per 100 menstrual cycles) compared with those who consumed any amount of alcohol and more than one cup of coffee per day (10.5 pregnancies per 100 menstrual cycles).[15] Based on this preliminary evidence, women who wish to improve their chances of conception should avoid alcohol and caffeine.

Being excessively overweight or underweight may also contribute to infertility in females. Infertile women who are overweight or underweight should consult a physician.

Some conventional medications can interfere with fertility. When in doubt, women taking prescription drugs should consult their physician or pharmacist.

Nutritional supplements that may be helpful

In a preliminary study of women with infertility and mild endometriosis, supplementation with propolis (500 mg twice a day for six months) was associated with a pregnancy rate of 60%, compared with a rate of 20% in the placebo group (a statistically significant difference). Whether propolis would be beneficial for infertile women who do not have endometriosis is not known.

In some women, infertility is due to a hormonal abnormality known as luteal phase defect. In this condition, the uterine lining does not develop and mature properly, presumably because of a deficiency of the hormone progesterone. In a study of infertile women with luteal phase defect, supplementation with 750 mg of vitamin C per day for up to six months resulted in a pregnancy rate of 25%, compared with a rate of 11% in an untreated control group, a statistically significant difference.

A double-blind trial found that taking a multivitamin-mineral supplement increased female fertility.

Vitamin E deficiency in animals leads to infertility. In a preliminary human trial, infertile couples given vitamin E (200 IU per day for the female and 100 IU per day for the male) showed a significant increase in fertility.

In preliminary research, even a subtle deficiency of iron has been tentatively linked to infertility. Women who are infertile should consult a doctor to rule out the possibility of iron deficiency.

Some previously infertile women have become pregnant after supplementing with PABA (para-aminobenzoic acid), 100 mg four times per day. PABA is believed to increase the ability of oestrogen to facilitate fertility.

Supplementation with the amino acid, L-arginine (16 grams per day), has been shown to improve fertilization rates in women with a previous history of failed attempts at in vitro (test tube) fertilization.

Herbs that may be helpful

Vitex is occasionally used as an herbal treatment for infertility—particularly in cases with established luteal phase defect (shortened second half of the menstrual cycle) and high levels of the hormone, prolactin. In one trial, 48 women (ages 23 to 39) who were diagnosed with infertility took vitex once daily for three months. Seven women became pregnant during the trial, and 25 women experienced normalized progesterone levels—which may increase the chances for pregnancy. In another double-blind trial, significantly more infertile women became pregnant after taking a product whose main ingredient is vitex (the other ingredients were homeopathic preparations) than did those who took a placebo. The amount used in this trial was 30 drops of fluid extract twice a day, for a total of 1.8 ml per day. This specific preparation is not available in the United States. Some doctors recommend taking 40 drops of a liquid extract of vitex each morning with water. Approximately 35–40 mg of encapsulated powdered vitex (one capsule taken in the morning) provides a similar amount. Vitex should be discontinued once a woman becomes pregnant.

Holistic approaches that may be helpful

Acupuncture may be helpful in the treatment of some cases of female infertility due to problems with ovarian function. In a preliminary trial, women who did not ovulate were treated with acupuncture 30 times over three months. Effectiveness was determined by a combination of measures indicating ovulation was returning to normal. Acupuncture treatment resulted in a marked improvement in 35% and slight improvement in 48% of trial participants. The beneficial results achieved with acupuncture may be due to alterations in the hormonal messages from the brain to the ovary.

Auricular (ear) acupuncture has been studied in a preliminary trial and compared with standard hormone therapy for treatment of infertility. In both the acupuncture and hormone therapy groups, 15 out of 45 patients became pregnant. Although the pregnancy rates were similar with either treatment, side effects occurred only in women taking hormones. Still, double-blind trials are needed to conclusively determine whether acupuncture is a useful treatment for female infertility.

Gallstones

Gallstones are hardened formations, composed primarily of cholesterol, that develop in the gallbladder.

Gallstones are commonly associated with bile that contains excessive cholesterol, a deficiency of other substances in bile (bile acids and lecithin), or a combination of these factors.

What are the symptoms of gallstones?

Gallstone attacks cause extreme pain in the upper-right quarter of the abdomen, often extending to the back. This pain can be accompanied by nausea and vomiting.

Dietary changes that may be helpful

Cholesterol is the primary ingredient in most gallstones. Some, but not all, research links dietary cholesterol to the risk of gallstones. Some doctors suggest avoiding eggs, either because of their high cholesterol content or because eggs may be allergenic. (See the discussion about gallstones and allergies below.) A recent study of residents of southern Italy found that a diet rich in sugars and animal fats and poor in vegetable fats and fibres was a significant risk factor for gallstone formation.

Most studies report that vegetarians are at low risk for gallstones. In some trials, vegetarians had only half the gallstone risk compared with meat eaters. Vegetarians often eat fewer calories and less cholesterol. They also tend to weigh less than meat eaters. All of these differences may reduce gallstone incidence. The specific factors in a vegetarian diet that account for a low risk of gallstone formation remain somewhat unclear and may only be present in certain vegetarian diets and not others. For example, some studies have found that vegetarians eating a high vegetable fat diet had elevated rather than reduced risks of gallstone formation.

Coffee increases bile flow and therefore might reduce the risk of gallstones. In a large study of men, those drinking two to three cups of regular coffee per day had a 40% lower risk of gallstones compared with men who did not drink coffee. In the same report, men drinking at least four cups per day had a 45% reduced risk. Caffeine appears to be the protective ingredient, as decaffeinated coffee consumption was not linked with any protection. People at risk for gallstones who wish to consider increasing coffee drinking to reduce risks should talk with a doctor beforehand. Caffeinated beverages can aggravate symptoms of insomnia, peptic ulcer, panic attacks, and a variety of other conditions.

Constipation has been linked to the risk of forming gallstones. When constipation is successfully resolved, it has reduced the risk of gallstone formation. Wheat bran, commonly used to relieve constipation when combined with fluid, has been reported to reduce the relative amount of cholesterol in bile of a small group of people whose bile contained excessive cholesterol (a risk factor for gallstone formation). The same effect has been reported in people who already have gallstones. Doctors sometimes recommend two tablespoons per day of unprocessed Miller's bran; an alternative is to consume commercial cereal products that contain wheat bran. Bran should always be accompanied by plenty of fluid. Adding more bran may cause gastrointestinal symptoms in some people. If this occurs, consult a doctor.

Gallbladder attacks (though not the stones themselves) have been reported to result from food allergies. The one study to examine this relationship found that all of the participants with gallbladder problems showed relief from gallbladder pain when allergy-provoking foods were identified and eliminated from the diet. Eggs, pork, and onions were reported to be the most common triggers. Pain returned when the problem foods were reintroduced into the diet. Doctors can help diagnose food allergies.

Lifestyle changes that may be helpful

People with gallstones may consume too many calories and are often overweight. Obese women have seven times the risk of forming gallstones compared with women who are not overweight. Even slightly overweight women have significantly higher risks. Losing weight is likely to help, but rapid weight loss might increase the risk of stone formation. Any weight-loss program to prevent or treat gallstones should be reviewed by

a doctor. Weight-loss plans generally entail reducing dietary fat, a change that itself correlates with protection against gallstone formation and attacks.

In women, recreational exercise significantly reduces the risk of requiring gallbladder surgery due to gallstones. In a study of over 60,000 women, an average of two to three hours per week of recreational exercise (such as cycling, jogging, and swimming) reduced the risk of gallbladder surgery by about 20%.

Use of birth control pills significantly increases a woman's risk of developing gallstones.

Nutritional supplements that may be helpful

Vitamin C is needed to convert cholesterol to bile acids. In theory, such a conversion should reduce gallstone risks. Women who have higher blood levels of vitamin C have a reduced risk of gallstones. Although this does not prove that vitamin C supplements can prevent or treat gallstones, some researchers believe this is plausible. One study reported that people who drink alcohol and take vitamin C supplements have only half the risk of gallstones compared with other drinkers, though the apparent protective effect of vitamin C did not appear in non-drinkers. In another trial, supplementation with vitamin C (500 mg taken four times per day for two weeks before gallbladder surgery) led to improvement in one parameter of gallstone risk ("nucleation time"), though there was no change in the relative level of cholesterol found in bile. While many doctors recommend vitamin C supplementation to people with a history of gallstones, supportive evidence remains preliminary.

According to one older report, people with gallstones were likely to have insufficient stomach acid. Some doctors assess adequacy of stomach acid in people with gallstones and, if appropriate, recommend supplementation with betaine HCl. Nonetheless, no research has yet explored whether such supplementation reduces symptoms of gallstones.

Phosphatidylcholine (PC)—a purified extract from lecithin—is one of the components of bile that helps protect against gallstone formation. Some preliminary studies suggest that 300–2,000 mg per day of PC may help dissolve gallstones. Some doctors suggest PC supplements as part of gallstone treatment, though the supporting research is weak.

Herbs that may be helpful

Milk thistle extracts in capsules or tablets may be beneficial in preventing gallstones. In one study, silymarin (the active component of milk thistle) reduced cholesterol levels in bile, which is one important way to reduce gallstone formation. People in the study took 420 mg of silymarin per day.

According to preliminary research, a mixture of essential oils dissolved some gallstones when taken for several months. The greatest benefits occurred when the oils were combined with chenodeoxycholic acid, which is available by prescription.[37] However, only about 10% of people with gallstones have shown significant dissolution as a result of taking essential oils. Peppermint oil is the closest available product to that used in the research described above. Use of peppermint or any other essential oil to dissolve gallstones should only be attempted with the close supervision of a doctor.

Gingivitis

Gingivitis is an inflammation of the gums (gingivae), usually caused by bacteria. Periodontitis is a deeper and more serious inflammation of both the gingivae and tissue that surrounds and supports the teeth.

Both common conditions are often progressive and can eventually result in loss of the underlying bone that supports the teeth. After age 30, periodontal disease is responsible for more tooth loss than are dental cavities. Severe periodontitis sometimes requires surgery to repair damaged gum tissue.

What are the symptoms of gingivitis?

Gingivitis is usually painless, although the gums may be red, swollen, and bleed easily with brushing. There can also be a bad taste in the mouth or persistent bad breath (halitosis). In advanced stages of gingivitis, the gums recede, exposing the nerve roots, and the teeth may become loose. This may be an indication of periodontitis.

Nutritional supplements that may be helpful

A 0.1% solution of folic acid used as a mouth rinse (5 ml taken twice a day for 30 to 60 days) has reduced gum inflammation and bleeding in people with gingivitis in double-blind trials. The folic acid solution is rinsed in the mouth for one to five minutes and then spit out. Folic acid was also found to be effective when taken in capsule or tablet form (4 mg per day),[3] though in another trial studying pregnant women with gingivitis, only the mouthwash—and not folic acid in pill form—was effective. However, this may have been due to the body's increased requirement for folic acid during pregnancy.

Phenytoin (Dilantin®) therapy causes gum disease (gingival hyperplasia) in some people. A regular program of dental care has been reported to limit or prevent gum disease in people taking phenytoin. Double-blind research has shown that a daily oral rinse with a liquid folic acid preparation inhibited phenytoin-induced gum disease more than either folic acid in pill form or placebo.

People who are deficient in vitamin C may be at increased risk for periodontal disease.[9] When a group of people with periodontitis who normally consumed only 20–35 mg of vitamin C per day were given an additional 70 mg per day, objective improvement of periodontal tissue occurred in only six weeks. It makes sense for people who have a low vitamin C intake (e.g., people who eat few fruits and vegetables) to supplement with vitamin C in order to improve gingival health.

For people who consume adequate amounts of vitamin C in their diet, several studies have found that supplemental vitamin C has no additional therapeutic effect. Research, including double-blind evidence,[12] shows that vitamin C fails to significantly reduce gingival inflammation in people who are not vitamin C deficient. In one study, administration of vitamin C plus flavonoids (300 mg per day of each) did improve gingival health in a group of people with gingivitis; there was less improvement, however, when vitamin C was given without flavonoids. Preliminary evidence has suggested that flavonoids by themselves may reduce inflammation of the gums.

Preliminary evidence has linked gingivitis to a coenzyme Q10 (CoQ10) deficiency. Some researchers believe this deficiency could interfere with the body's ability to repair damaged gum tissue. In a double-blind trial, 50 mg per day of CoQ10 given for three

weeks was significantly more effective than a placebo at reducing symptoms of gingivitis. Compared with conventional approaches alone, topical CoQ10 combined with conventional treatments resulted in better outcomes in a group of people with periodontal disease.

Some, but not all, research has found that giving 500 mg of calcium twice per day for six months to people with periodontal disease results in a reduction of symptoms (bleeding gums and loose teeth). Although some doctors recommend calcium supplementation to people with diseases of the gums, supportive scientific evidence remains weak.

Herbs that may be helpful

Bloodroot contains alkaloids, principally sanguinarine, that are sometimes used in toothpaste and other oral hygiene products because they inhibit oral bacteria. Sanguinarine-containing toothpastes and mouth rinses should be used according to manufacturer's directions. A six-month, double-blind trial found that use of a bloodroot and zinc toothpaste reduced gingivitis significantly better than placebo. However, a similar study was unable to replicate these results. Thus, at present, it is unknown who will respond to bloodroot toothpaste and who will not. Concerns also exist about the long-term safety of bloodroot.

A mouthwash combination that includes sage oil, peppermint oil, menthol, chamomile tincture, expressed juice from Echinacea, myrrh tincture, clove oil, and caraway oil has been used successfully to treat gingivitis. In cases of acute gum inflammation, 0.5 ml of the herbal mixture in half a glass of water three times daily is recommended by some herbalists. This herbal preparation should be swished slowly in the mouth before spitting out. To prevent recurrences, slightly less of the mixture can be used less frequently.
A toothpaste containing sage oil, peppermint oil, chamomile tincture, expressed juice from Echinacea purpurea, myrrh tincture, and rhatany tincture has been used to accompany this mouthwash in managing gingivitis.

Of the many herbs listed above, chamomile, Echinacea, and myrrh should be priorities. These three herbs can provide anti-inflammatory and antimicrobial actions critical to successfully treating gingivitis.

Halitosis

Halitosis is the technical term for bad breath, a condition estimated to affect 50 to 65% of the population.

Up to 90% of cases are thought to originate from sources in the mouth, including poor oral hygiene, periodontal disease, coating on the tongue, impacted food, faulty dental restorations, and throat infections. The remaining 10% are due to systemic disorders, such as peptic ulcer (when associated with infection), lung infections (bad breath can be the first sign in some cases), liver or kidney disease, diabetes mellitus, cancer, or even a person's imagination (healthy individuals sometimes complain of bad breath that cannot be smelled by anyone else and is not linked to any clinical disorder).

In most cases, bad breath in the mouth can be traced to sulphur gases produced by bacteria in the mouth. Factors that support the growth of these bacteria will predispose a person to halitosis. Examples include accumulation of food within pockets around the teeth, among the bumps at the back of the tongue, or in small pockets in the tonsils;

sloughed cells from the mouth; and diminished saliva flow. Mucus in the throat or sinuses can also serve as a breeding ground for bacteria. Conditions are most favourable for odour production during the night and between meals.

Although bad breath primarily represents a source of embarrassment or annoyance, research has shown that the sulphur gases most responsible for halitosis (hydrogen sulphide and methyl mercaptan) are also potentially damaging to the tissues in the mouth, and can lead to periodontitis (inflammation of the gums and ligaments supporting the teeth). As periodontal disease progresses, so may the halitosis, as bacteria accumulate in the pockets that form next to the teeth.

Lifestyle changes that may be helpful

Home oral hygiene is probably the most effective way to reduce accumulations of debris and bacteria that lead to halitosis. This includes regular tooth brushing and flossing, and/or the use of mechanical irrigators to remove accumulations of food after eating. Brushing the tongue or using a commercial tongue scraper, especially over the bumpiest region of the tongue, may help remove the odour-causing agents as well as lower the overall bacteria count in the mouth.
Because of the role of gum disease in halitosis, regular dental care is recommended to prevent or treat gum disease. Treatment for a person with periodontal pockets might include scaling of the teeth to remove tartar.

A reduced saliva flow increases the concentration of bacteria in the mouth and worsens bad breath. One of the most common causes of dry mouth is medication, such as antihistamines, some antidepressants, and diuretics; however, chronic mouth breathing, radiation therapy, dehydration, and various diseases can also contribute. Measures that help increase saliva production (e.g., chewing sugarless gum and drinking adequate water) may improve halitosis associated with poor saliva flow. Avoiding alcohol (ironically found in many commercial mouthwashes) may also help, because alcohol is drying to the mouth.

Access by oral bacteria to sulphur-containing amino acids will enhance the production of sulphur gases that are responsible for bad breath. This effect was demonstrated in a study in which concentrations of these sulphur gases in the mouth were increased after subjects used a mouth rinse containing the amino acid cysteine. Cleaning the mouth after eating sulphur-rich foods, such as dairy, fish, and meat, may help remove the food sources for these bacteria.

Nutritional supplements that may be helpful

Because most halitosis stems from bacterial production of odiferous compounds, general measures to diminish bacteria as well as measures targeted at prevention or treatment of periodontitis and gingivitis may be helpful. Mouthwashes or toothpastes containing a compound called stabilized chlorine dioxide appear to help eliminate bad breath by directly breaking down sulphur compounds in the mouth. One study showed reductions in mouth odour for at least four hours following the use of a mouth rinse containing this substance.

Preliminary research has also demonstrated the ability of zinc to reduce the concentration of volatile sulphur compounds in the mouth. One study found that the addition of zinc to a baking soda toothpaste lessened halitosis by lowering the levels of

these compounds. A mouth rinse containing zinc chloride was seen in another study to neutralize the damaging effect of methyl mercaptan on periodontal tissue in the mouth.
Nutritional supplements recommended by some doctors for prevention and treatment of periodontitis include vitamin C (people with periodontitis are often found to be deficient), vitamin E, selenium, zinc, coenzyme Q10, and folic acid. Folic acid has also been shown to reduce the severity of gingivitis when taken as a mouthwash.

Herbs that may be helpful

The potent effects of some commercial mouthwashes may be due to the inclusion of thymol (from thyme) and eukalyptol (from eucalyptus)—volatile oils that have proven activity against bacteria. One report showed bacterial counts plummet in as little as 30 seconds following a mouth rinse with the commercial mouthwash Listerine™, which contains thymol and eukalyptol. Thymol alone has been shown in research to inhibit the growth of bacteria found in the mouth. Because of their antibacterial properties, other volatile oils made from tea tree, clove, caraway, peppermint, and sage, as well as the herbs myrrh and bloodroot, might be considered in a mouthwash or toothpaste. Due to potential allergic reactions and potential side effects if some of these oils are swallowed, it is best to consult with a qualified healthcare professional before pursuing self-treatment with volatile oils that are not in approved over-the-counter products for halitosis.

Hay Fever

Hay fever is an allergic condition triggered by the immune system's response to inhalant substances (frequently pollens).

Researchers have yet to clearly understand why some people's immune systems over-react to exposure to pollens while other people do not suffer from this problem. Symptoms of hay fever are partly a result of inflammation that, in turn, is activated by the immune system.

What are the symptoms of hay fever?

Inhaled allergens trigger sneezing and inflammation of the nose and mucous membranes (conjunctiva) of the eyes. The nose, roof of the mouth, eyes, and throat begin to itch gradually or abruptly after the onset of the pollen season. Tearing, sneezing, and clear, watery nasal discharge soon follow the itching. Headaches and irritability may also occur.

Dietary changes that may be helpful

People with inhalant allergies are likely to also have food allergies. A hypoallergenic diet has been reported to help some people with asthma and allergic rhinitis, but the effect of such a diet on hay fever symptoms has not been studied. Hay fever sufferers interested in exploring the possible effects of a food allergy avoidance program should talk with a doctor. Discovering and eliminating offending food allergens, should they exist, is likely to improve overall health even if such an approach has no effect on hay fever symptoms.

Nutritional supplements that may be helpful

Although vitamin C has antihistamine activity, and supplementation, in preliminary research, has been reported to help people with hay fever, 2,000 mg of vitamin C per day did not reduce hay fever symptoms in a placebo controlled trial.[6] Thus, while some

doctors recommend that hay fever sufferers take 1,000–3,000 mg of vitamin C per day, supportive evidence remains weak.

Quercetin is an increasingly popular treatment for hay fever even though only limited preliminary clinical research has suggested that it is beneficial to hay fever sufferers.[7]
The oral administration of a thymus extract known as Thymomodulin® has been shown in preliminary studies and double-blind trials to improve the symptoms of hay fever and allergic rhinitis. Presumably this clinical improvement is the result of restoration of proper control over immune function.

Herbs that may be helpful

Tylophora is an herb used by Ayurvedic doctors in India to treat people with allergies. It contains compounds that have been reported to interfere with the action of mast cells, which are key components in the process of inflammation responsible for most hay fever symptoms.[11] Mast cells are found in airways of the lungs (among other parts of the body). When mast cells are activated by pollen or other allergens, they release the chemical histamine, which in turn leads to a wide number of symptoms familiar to hay fever sufferers—itchy eyes, runny nose, and chest tightness. Ayurvedic doctors sometimes recommend 200–400 mg of the dried herb daily or 1–2 ml of the tincture per day for up to two weeks.

In an isolated double-blind trial, nettle leaf led to a slight reduction in symptoms of hay fever—including sneezing and itchy eyes. However, no other research has investigated this relationship. Despite the lack of adequate scientific support, some doctors suggest taking 450 mg of nettle leaf capsules or tablets two to three times per day, or a 2–4 ml tincture three times per day for people suffering from hay fever.
The Japanese herbal formula known as sho-seiryu-to has been shown to reduce symptom, such as sneezing, for people with hay fever. Sho-seiryu-to contains liquorice, cassia bark, schisandra, ma huang (ephedra), ginger, peony root, pinellia, and asiasarum root.

Heartburn

“Indigestion” refers to any number of gastrointestinal complaints, which can include gas (belching, flatulence, or bloating) and upset stomach. “Heartburn” refers to a burning feeling that can be caused by stomach acid regurgitating into the oesophagus from the stomach, by gastritis (inflammation of the lining of the stomach), or by an ulcer of the stomach or duodenum (also called peptic ulcer). “Low stomach acidity” refers to the inability to produce adequate quantities of stomach acid that will affect digestion and absorption of nutrients.

In some cases, such as lactose intolerance, symptoms of indigestion are due to a specific cause that requires specific treatment. Sometimes symptoms associated with indigestion are caused by diseases unrelated to the gastrointestinal tract. For example, ovarian cancer may cause a sensation of bloating. Anyone with symptoms of indigestion should be properly diagnosed by a healthcare professional before assuming that the information below is applicable to their situation.

The most common cause of heartburn is gastroesophageal reflux disease (GERD), in which the sphincter between the oesophagus and the stomach is not functioning

properly. Another, related cause of heartburn is hiatal hernia, in which a small portion of the stomach protrudes through the aforementioned sphincter.

According to Jonathan Wright, MD, another cause of heartburn can be too little stomach acid. This may seem to be a paradox, but based on the clinical experience of a few doctors such as Dr. Wright, supplementing with betaine HCl (a compound that contains hydrochloric acid) often relieves the symptoms of heartburn and improves digestion, at least in people who have hypochlorhydria (low stomach acid). The amount of betaine HCl used varies with the size of the meal and with the amount of protein ingested. Typical amounts recommended by doctors range from 600 to 2,400 mg per meal. Use of betaine HCl should be monitored by a healthcare practitioner and should be considered only for indigestion sufferers who have been diagnosed with hypochlorhydria.

Medical researchers since the 1930s have been concerned about the consequences of hypochlorhydria. While all the health consequences are still not entirely clear, some have been well documented.

Many minerals and vitamins appear to require adequate concentrations of stomach acid to be absorbed optimally—examples are iron, zinc, and B-complex vitamins, including folic acid. People with achlorhydria (no stomach acid) or hypochlorhydria may therefore be at risk of developing various nutritional deficiencies, which could presumably contribute to the development of a wide range of health problems.

One of the major functions of stomach acid is to initiate the digestion of large protein molecules. If this digestive function is not performed efficiently, incompletely digested protein fragments may be absorbed into the bloodstream. The absorption of these large molecules may contribute to the development of food allergies and immunological disorders.

In addition, stomach acid normally provides a barrier against bacteria, fungi, and other organisms that are present in food and water. People with inadequate stomach acidity may therefore be at risk of having “unfriendly” microorganisms colonize their intestinal tract. Some of these organisms produce toxic substances that can be absorbed by the body.

Some researchers have found that people with certain diseases are more likely to have an inability to produce normal quantities of stomach acid. However, this does not mean these diseases are caused by too little stomach acid. Jonathan Wright, MD, usually tests patients’ stomach acid if they suffer from food allergies, arthritis (both rheumatoid arthritis and osteoarthritis), pernicious anaemia (too little vitamin B12), asthma, diabetes, vitiligo, eczema, tic douloureux, Addison’s disease, celiac disease, lupus erythematosus, or thyroid disease.

What are the symptoms of indigestion?

The symptoms of indigestion or upset stomach may include painful or burning sensations in the upper abdomen, bloating, belching, diffuse abdominal pain, heartburn, passing gas, nausea, and occasionally vomiting. The appearance of these symptoms is often associated with eating.

Dietary changes that may be helpful

Doctors have observed that heartburn and indigestion may be relieved in some people by avoiding or reducing the intake of caffeine and alcohol. In addition, some people with symptoms of indigestion appear to have food allergies or intolerances. Avoiding such foods may improve digestive complaints in those people. While most doctors believe there is an important connection between diet and intestinal symptoms, there are few published data documenting such associations. Dietary modifications should be undertaken with the help of a healthcare practitioner.

People who eat too fast or fail to chew their food adequately may also experience symptoms of indigestion or heartburn.

Nutritional supplements that may be helpful

Lipase, a pancreatic enzyme, aids in the digestion of fats and may improve digestion in some people. In a double-blind trial, a timed-release form of pancreatic enzymes was shown to significantly reduce gas, bloating, and fullness after a high-fat meal. Participants in this study took one capsule immediately before the meal and two capsules immediately after the meal. The three capsules together provided 30,000 USP units of lipase, 112,500 USP units of protease, and 99,600 USP units of amylase. However, the amount of pancreatic enzymes needed may vary from person to person, and should be determined with the help of a doctor.

Vitamin B12 supplementation may be beneficial for a subset of people suffering from indigestion: those with delayed emptying of the stomach contents in association with Helicobacter pylori infection and low blood levels of vitamin B12. In a double-blind study of people who satisfied those criteria, treatment with vitamin B12 significantly reduced symptoms of dyspepsia and improved stomach-emptying times.

Herbs that may be helpful

Three major categories of herbs are used to treat indigestion when no cause for the condition is known: bitters (digestive stimulants), carminatives (gas-relieving herbs), and demulcents (soothing herbs). The effects of these different categories on heartburn and low stomach acid will be discussed individually. Although there is overlap in the conditions, the categories are helpful.

Bitter herbs are thought to stimulate digestive function by increasing saliva production and promoting both stomach acid and digestive enzyme production. As a result, they are particularly used when there is low stomach acid but not in heartburn (where too much stomach acid could initially exacerbate the situation). These herbs literally taste bitter. Some examples of bitter herbs include greater celandine, wormwood, and gentian. Bitters are generally taken either by mixing 1–3 ml tincture into water and sipping slowly 10–30 minutes before eating, or by making tea, which is also sipped slowly before eating.

A double-blind study found that a standardized extract of greater celandine could relieve symptoms of indigestion (such as abdominal cramping, sensation of fullness, and nausea) significantly better than placebo. The study employed an extract standardized to 4 mg of chelidonine per capsule and gave 1–2 tablets three times daily for six weeks. However, recent reports of hepatitis following intake of greater celandine have raised concerns about its safety for treating indigestion.

Very little published research is available on the traditional uses of bitter orange as a digestive aid and sedative. The German Commission E has approved the use of bitter orange for loss of appetite and dyspeptic ailments. One test tube study showed bitter orange to potently inhibit rotavirus (a cause of diarrhoea in infants and young children). Bitter orange, in an herbal combination formula, reportedly normalized stool function and completely eased intestinal pain in 24 people with non-specific colitis and, again in an herbal combination formula, normalized stool function in another 32 people with constipation.

Artichoke, in addition to being an edible plant, is a mild bitter. Extracts of artichoke have been repeatedly shown in double-blind research to be beneficial for people with indigestion. Artichoke is particularly useful when the problem is lack of bile production by the liver. Extracts providing 500–1,000 mg per day of cynarin, the main active constituent of artichoke, are recommended by doctors.

Wormwood is sometimes used in combination with carminative herbs for people with indigestion. One double-blind trial found that a combination with peppermint, caraway, and fennel was useful in reducing gas and cramping in people with indigestion. Other bitters are gentian, dandelion, blessed thistle, yarrow, devil's claw, bitter orange, bitter melon, juniper, andrographis, prickly ash, and centaury. The amounts used are the same as the general recommendations for bitters when they are employed for the treatment of indigestion.
Some bitters widely used in traditional medicine in North America include yarrow, yellow dock, goldenseal, Oregon grape, and vervain. Oregon grape's European cousin barberry has also traditionally been used as a bitter. Animal studies indicate that yarrow, barberry, and Oregon grape, in addition to stimulating digestion like other bitters, may relieve spasms in the intestinal tract.

Boldo has been used in South America for a variety of digestive conditions, although this may have stemmed from its impact on intestinal infections or liver function. Studies specifically showing a benefit from taking boldo in people with indigestion and heartburn have not been performed. Picrorhiza, from India, has a similar story to that of boldo. While it is clearly a bitter digestive stimulant, human studies to confirm this have not yet been completed.

Horehound contains a number of constituents, including alkaloids, flavonoids, diterpenes (e.g., marrubiin), and trace amounts of volatile oils. The major active constituent marrubiin and possibly its precursor, premarrubiin, are herbal bitters that increase the flow of saliva and gastric juice, thereby stimulating the appetite. Similar to horehound, elecampane has been used by herbalists to treat people with indigestion.

Carminatives (also called aromatic digestive tonics or aromatic bitters) may be used to relieve symptoms of indigestion, particularly when there is excessive gas. It is believed that carminative agents work, at least in part, by relieving spasms in the intestinal tract.

Among the most notable and well-studied carminatives are peppermint, fennel, and caraway. Double-blind trials have shown that combinations of peppermint and caraway oil and a combination of peppermint, fennel, caraway, and wormwood have been found to reduce gas and cramping in people with indigestion. Generally, 3–5 drops of natural essential oils or 3–5 ml of tincture of any of these herbs, taken in water two to three times per day before meals, can be helpful. Alternately, a tea can be made by grinding

2–3 teaspoons of the seeds of fennel or caraway or the leaves of peppermint, and then simmering them in a cup of water (covered) for ten minutes. Drink three or more cups per day just after meals.

Linden also has a long tradition of use for indigestion. Older clinical trials have shown that linden flower tea can help people who suffer from upset stomach or from excessive gas that causes the stomach to push up and put pressure on the heart (also known as the gastro cardiac syndrome.) The reputed antispasmodic action of linden, particularly in the intestines, has been confirmed in at least one human trial. Linden tea is prepared by steeping 2–3 tsp of flowers in a cup of hot water for 15 minutes. Several cups per day are recommended.

In a double-blind trial, the spice turmeric was found to relieve indigestion. Two capsules containing 250 mg turmeric powder per capsule were given four times per day.

Chamomile (German chamomile or Matricaria recutita) is effective in relieving inflamed or irritated mucous membranes of the digestive tract. Since heartburn sometimes involves reflux of stomach acid into the oesophagus, the anti-inflammatory properties of chamomile may also be useful. In addition, chamomile promotes normal digestion. However, modern studies to prove chamomile beneficial for people with heartburn or indigestion are lacking. Roman chamomile (Anthemis nobilis) has not been studied for indigestion though it has traditionally been used similarly to German chamomile.
Typically taken in tea form, chamomile is recommended three to four times per day between meals. Chamomile tea is prepared by pouring boiling water over dried flowers, and steeping for several minutes. Alternatively, 3–5 ml of chamomile tincture may be added to hot water or 2–3 grams of chamomile in capsule or tablet form may be taken three to four times per day between meals.

Lemon balm is another carminative herb used traditionally for indigestion. Lemon balm, usually taken as tea, is prepared by steeping 2–3 teaspoons of leaves in hot water for 10 to 15 minutes in a covered container. Three or more cups per day are consumed immediately after meals. Three to five millilitres of tincture can also be used three times per day.

There are numerous other carminative herbs, including European angelica root (Angelica archangelica), anise, Basil, cardamom, cinnamon, cloves, coriander, dill, ginger, oregano, rosemary, sage, lavender, and thyme. Many of these are common kitchen herbs and thus are readily available for making tea to calm an upset stomach. Rosemary is sometimes used to treat indigestion in the elderly by European herbal practitioners. The German Commission E monograph suggests a daily intake of 4–6 grams of sage leaf. Pennyroyal is no longer recommended for use in people with indigestion, however, due to potential side effects.

Demulcents are the third category of herbs used to treat indigestion and heartburn. These herbs seem to work by decreasing inflammation and forming a physical barrier against stomach acid or other abdominal irritants. Examples of demulcent herbs include ginger, liquorice, and slippery elm.

Ginger is a spice well known for its traditional use as a treatment for a variety of gastrointestinal complaints, ranging from flatulence to ulcers. Ginger has anti-

inflammatory and anti-nausea properties. Ginger has been shown to enhance normal, spontaneous movements of the intestines that aid digestion.

Liquorice protects the mucous membranes lining the digestive tract by increasing the production of mucin, a compound that protects against the adverse effects of stomach acid and various harmful substances. The extract of liquorice root that is most often used by people with indigestion is known as deglycyrrhizinated liquorice (DGL). Glycyrrhizin, which occurs naturally in liquorice root, has cortisone-like effects and can cause high blood pressure, water retention, and other problems in some people. When the glycyrrhizin is removed to form DGL, the liquorice root retains its beneficial effects against indigestion, while the risk of side effects is greatly reduced. The usual suggested amount of DGL is one or two chewable tablets (250–500 mg per tablet), chewed and swallowed 15 minutes before meals and one to two hours before bedtime. Although many research trials show that DGL is helpful for people with peptic ulcers, the use of DGL for heartburn and indigestion is based primarily on anecdotal information.

The mucilage content in slippery elm appears to act as a barrier against the damaging effects of acid on the oesophagus in people with heartburn. It may also have an anti-inflammatory effect locally in the stomach and intestines. Two or more tablets or capsules (typically 400–500 mg each) may be taken three to four times per day. Alternatively, a tea is made by boiling 1/2–2 grams of the bark in 200 ml of water for 10 to 15 minutes, which is then cooled before drinking; three to four cups a day can be used. Tincture (5 ml three times per day) may also be taken but is believed to be less helpful. Marshmallow and bladderwrack may be used the same way as slippery elm.

Rooibos is traditionally used as a tea as a digestive aid. Unfortunately, no clinical trials have yet been published on this herb, so its efficacy is still unknown. Typically 1 to 4 teaspoons (5 to 20 mg) of rooibos is simmered in one cup of water (236 ml) for up to 10 minutes. Three cups of this tea can be drunk per day. Three cups of this tea can be drunk per day.

People in the south-western United States and northern Mexico have long used chaparral tea to help calm upset stomachs. It is unclear into which of the above categories—if any—chaparral fits. This strong tasting tea was used only in small amounts. Modern research has not confirmed the usefulness of chaparral for indigestion, and there are serious concerns about the safety of improper internal use of this herb. Before taking chaparral, consult with a knowledgeable healthcare professional.

Haemorrhoids

Haemorrhoids are enlarged raised veins in the anus or rectum.

Common haemorrhoids are often linked to both diarrhoea and constipation. Although the belief that haemorrhoids are caused by constipation has been questioned by researchers, most doctors feel that many haemorrhoids are triggered by the straining that accompanies chronic constipation. Therefore, natural approaches to haemorrhoids sometimes focus on overcoming constipation.

What are the symptoms of haemorrhoids?

Symptoms of haemorrhoids may include painful swelling or a lump in the anus that can bleed and become inflamed, often causing discomfort and itching. There may also be bright red blood on the toilet paper, the stool, or in the toilet bowl.

Dietary changes that may be helpful

Populations in which fibre intake is high have a very low incidence of haemorrhoids. Insoluble fibre—the kind found primarily in whole grains and vegetables—increases the bulk of stool. Drinking water with a high-fibre meal or a fibre supplement results in softer, bulkier stools, which can move more easily. As a result, most doctors believe that fibre in combination with increased intake of liquids helps to treat people with haemorrhoids. Nonetheless, few clinical trials compare the effects of fibre supplementation against the effects of placebo in haemorrhoid sufferers.

Nutritional supplements that may be helpful

A number of flavonoids have been shown to have anti-inflammatory effects and/or to strengthen blood vessels. These effects could, in theory, be beneficial for people with haemorrhoids. Most, but not all, double-blind trials using a group of semi synthetic flavonoids (hydroxyethylrutosides derived from rutin) have demonstrated significant improvements in itching, bleeding, and other symptoms associated with haemorrhoids when people used supplements of 600–4,000 mg per day.

Other trials have evaluated Daflon, a product containing the food-derived flavonoids diosmin (90%) and hesperidin (10%). An uncontrolled trial reported that Daflon produced symptom relief in two-thirds of pregnant women with hemorrhoids.[9] Double-blind trials have produced conflicting results about the effects of Daflon in people with haemorrhoids. Amounts of flavonoids used in Daflon trials ranged from 1,000 to 3,000 mg per day. Diosmin and hesperidin are available separately as dietary supplements.
Some doctors recommend flavonoid supplements for people with haemorrhoids. However, many different flavonoids occur in food and supplements, and additional research is needed to determine which flavonoids are most effective against haemorrhoids.

Herbs that may be helpful

Constipation is believed to worsen haemorrhoid symptoms, and thus, bulk-forming fibres are often recommended for those with haemorrhoids. A double-blind trial reported that 7 grams of psyllium, an herb high in fibre, taken three times daily reduced the pain and bleeding associated with haemorrhoids. Some healthcare professionals recommend taking two tablespoons of psyllium seeds or 1 teaspoon of psyllium husks two or three times per day mixed with water or juice. It is important to maintain adequate fluid intake while using psyllium.

Topically applied astringent herbs have been used traditionally as a treatment for haemorrhoids. A leading astringent herb for topical use is witch hazel, which is typically applied to haemorrhoids three or four times per day in an ointment base.

Horse chestnut extracts have been reported from a double-blind trial to reduce symptoms of hemorrhoids.[14] Some doctors recommend taking horse chestnut seed extracts standardized for aescin (also known as escin) content (16–21%), or an isolated aescin preparation, providing 90 to 150 mg of aescin per day.

Hypertension

Approximately 90% of people with high blood pressure have “essential” or “idiopathic” hypertension, for which the cause is poorly understood. The terms “hypertension” and “high blood pressure” as used here refer only to this most common form and not to pregnancy-induced hypertension or hypertension clearly linked to a known cause, such as Cushing’s syndrome, pheochromocytoma, or kidney disease. Hypertension must always be evaluated by a healthcare professional. Extremely high blood pressure (malignant hypertension) or rapidly worsening hypertension (accelerated hypertension) almost always requires treatment with conventional medicine. People with mild to moderate high blood pressure should work with a doctor before attempting to use the information contained here, as blood pressure requires monitoring and in some cases the use of blood pressure-lowering drugs.

As with conventional drugs, the use of natural substances sometimes controls blood pressure if taken consistently but does not lead to a cure for high blood pressure. Thus, someone whose blood pressure is successfully reduced by weight loss, avoidance of salt, and increased intake of fruits and vegetables would need to maintain these changes permanently in order to retain control of blood pressure. Left untreated, hypertension significantly increases the risk of stroke and heart disease.

What are the symptoms of hypertension?

Essential hypertension is usually without symptoms until complications develop. The symptoms of complications depend on the organs involved.

Dietary changes that may be helpful

Primitive societies exposed to very little salt suffer from little or no hypertension. Salt (sodium chloride) intake has also been definitively linked to hypertension in western societies. Reducing salt intake in the diet lowers blood pressure in most people. The more salt is restricted, the greater the blood pressure-lowering effect. Individual studies sometimes come to differing conclusions about the relationship between salt intake and blood pressure, in part because blood pressure-lowering effects of salt restriction vary from person to person, and small to moderate reductions in salt intake often have minimal effects on blood pressure—particularly in young people and in those who do not have hypertension. Nonetheless, dramatic reductions in salt intake are generally effective for many people with hypertension.

With the prevalence of salted processed and restaurant food, simply avoiding the salt shaker no longer leads to large decreases in salt intake for most people. Totally eliminating salt is more effective, but is quite difficult to achieve. Moreover, while an overview of the research found “There is no evidence that sodium reduction presents any safety hazards,” reports of short-term paradoxical increases in blood pressure in response to salt restriction have occasionally appeared.[6] Therefore, people wishing to use salt reduction to lower their blood pressure should consult with a doctor.

Vegetarians have lower blood pressure than do people who eat meat. This occurs partly because fruits and vegetables contain potassium—a known blood pressure-lowering mineral. The best way to supplement potassium is with fruit, which contains more of the mineral than do potassium supplements. However, fruit contains so much potassium that people taking “potassium-sparing” diuretics can consume too much potassium simply by eating several pieces of fruit per day. Therefore, people taking potassium-sparing

diuretics should consult the prescribing doctor before increasing fruit intake. In the Dietary Approaches to Stop Hypertension (DASH) trial, increasing intake of fruits and vegetables (and therefore fibre) and reducing cholesterol and dairy fat led to large reductions in blood pressure (in medical terms, 11.4 systolic and 5.5 diastolic) in just eight weeks. Even though it did not employ a vegetarian diet itself, the outcome of the DASH trial supports the usefulness of vegetarian diets because diets employed by DASH researchers were related to what many vegetarians eat. The DASH trial also showed that blood pressure can be significantly reduced in hypertensive people (most dramatically in African Americans) with diet alone, without weight loss or even restriction of salt. Nonetheless, restricting salt while consuming the DASH diet has lowered blood pressure even more effectively than the use of the DASH diet alone.

Sugar has been reported to increase blood pressure in animals and humans in short-term trials. Though the real importance of this experimental effect remains unclear, some doctors recommend that people with high blood pressure cut back on their intake of sugar.

Right after consuming caffeine from coffee or tea, blood pressure increases briefly. In trials lasting almost two months on average, coffee drinking has led to small increases in blood pressure. The effects of long-term avoidance of caffeine (from coffee, tea, chocolate, cola drinks, and some medications) on blood pressure remain unclear. A few reports have even claimed that long-term coffee drinkers tend to have lower blood pressure than those who avoid coffee. Despite the lack of clarity in published research, many doctors tell people with high blood pressure to avoid consumption of caffeine.
Several double-blind trials have shown that adding 6.5–7 grams of fibre per day to the diet for several months leads to reductions in blood pressure. However, other trials have not found fibre helpful in reducing blood pressure. The reasons for these discrepant findings is not clear.

Food allergy was reported to contribute to high blood pressure in a study of people who had migraine headaches. In that report, all 15 people who also had high blood pressure experienced a significant drop in blood pressure when put on a hypoallergenic diet. People who suffer migraine headaches and have hypertension should discuss the issue of allergy diagnosis and elimination with a doctor.

Exposure to lead and other heavy metals has been linked to high blood pressure in some, but not all, research. If other approaches to high blood pressure prove unsuccessful, it makes sense for people with hypertension to have their body's burden of lead evaluated by a healthcare professional.

Lifestyle changes that may be helpful

Smoking is particularly injurious for people with hypertension. The combination of hypertension and smoking greatly increases the risk of heart disease-related sickness and death. All people with high blood pressure need to quit smoking.

Consumption of more than about three alcoholic beverages per day appears to increase blood pressure. Whether one or two drinks per day meaningfully increases blood pressure remains unclear.

Daily exercise can lower blood pressure significantly. A 12-week program of Chinese T'ai Chi was reported to be almost as effective as aerobic exercise in lowering blood

pressure. Progressive resistance exercise (e.g., weight lifting) also appears to help reduce blood pressure. At the same time, blood pressure has been known to increase significantly during the act of lifting heavy weights; for this reason, people with sharply elevated blood pressure, especially those with cardiovascular disease, should approach heavy strenuous resistance exercise with caution. In general, people over 40 years of age should consult with their doctors before starting any exercise regimen.

Most people with high blood pressure are overweight. Weight loss lowers blood pressure significantly in those who are both overweight and hypertensive. In fact, reducing body weight by as little as ten pounds can lead to a significant reduction in blood pressure. Weight loss appears to have a stronger blood pressure-lowering effect than dietary salt restriction.

Nutritional supplements that may be helpful

Both preliminary and double-blind trials have reported that supplementation with Coenzyme Q10 (CoQ10) leads to a significant decrease in blood pressure in people with hypertension. Much of this research has used 100 mg of CoQ10 per day for at least ten weeks.

EPA and DHA, the omega-3 fatty acids found in fish oil, lower blood pressure, according to an analysis of 31 trials. The effect was dependent on the amount of omega-3 oil used, with the best results occurring in trials using unsustainably high levels: 15 grams per day—the amount often found in 50 grams of fish oil. Although results with lower intakes were not as impressive, trials using over 3 grams per day of omega-3 (as typically found in ten 1,000 mg pills of fish oil) also reported significant reductions in blood pressure. One double-blind trial reported that DHA had greater effects on blood pressure than EPA or mixed fish oil supplements. DHA is now available as a supplement separate from EPA.

Potassium supplements in the amount of at least 2,400 mg per day lower blood pressure, according to an analysis of 33 trials. However, potassium supplements greater than 100 mg per tablet require a prescription, and the low-dose potassium supplements available without a prescription can irritate the stomach if taken in large amounts. Moreover, some people, such as those taking potassium-sparing diuretics, should not take potassium supplements. Therefore, the use of potassium supplements for lowering blood pressure should only be done under the care of a doctor.

Some, but not all, trials show that magnesium supplements—typically 350–500 mg per day—lower blood pressure. Magnesium appears to be particularly effective in people who are taking potassium-depleting diuretics. Potassium-depleting diuretics also deplete magnesium. Therefore, the drop in blood pressure resulting from magnesium supplementation in people taking these drugs may result from overcoming a mild magnesium deficiency.

Calcium supplementation—typically 800–1,500 mg per day—may lower blood pressure. However, while an analysis of 42 trials reported that calcium supplementation led to an average drop in blood pressure that was statistically significant, the actual decrease was small (in medical terms, a drop of 1.4 systolic over 0.8 diastolic pressure). Results might have been improved had the analysis been limited to studies of people with hypertension, since calcium has almost no effect on the blood pressure of healthy people. In the analysis of 42 trials, effects were seen both with dietary calcium and with

use of calcium supplements. A 12-week trial of 1,000 mg per day of calcium accompanied by blood pressure monitoring is a reasonable way to assess efficacy in a given person.

Five double-blind trials have found that vitamin C supplementation reduces blood pressure, but the reduction was statistically significant in only three of the five, and in most cases reductions were modest. Some doctors recommend that people with elevated blood pressure supplement with 1,000 mg vitamin C per day.

In a double-blind study of people with high blood pressure, 200 IU of vitamin E per day taken for 27 weeks was significantly more effective than a placebo at reducing both systolic and diastolic blood pressure. This study was done in Iran, and it is not clear whether the results would apply to individuals consuming a Western diet.

A deficiency of the amino acid taurine, is thought by some researchers to play an important role in elevating blood pressure in people with hypertension. Limited research has found that supplementation with taurine lowers blood pressure in animals[51] and in people (at 6 grams per day), possibly by reducing levels of the hormone epinephrine (adrenaline).

The amino acid arginine is needed by the body to make nitric oxide, a substance that allows blood vessels to dilate, thus leading to reduced blood pressure. Intravenous administration of arginine has reduced blood pressure in humans in some reports.[53] In one controlled trial, people not responding to conventional medication for their hypertension were found to respond to a combination of conventional medication and oral arginine (2 grams taken three times per day.)

Herbs that may be helpful

In a double-blind trial, people with mild hypertension took a tincture of Achillea wilhelmsii, an herb used in traditional Persian medicine. Participants in the trial used 15–20 drops of the tincture twice daily for six months. At the end of the trial, participants experienced significant reductions in both systolic and diastolic blood pressure compared to those who took placebo. No adverse effects were reported.

Garlic has a mild blood pressure-lowering effect, according to an analysis of ten double-blind trials. All of these trials administered garlic for at least four weeks, typically using 600–900 mg of garlic extract per day. Onion—closely related to garlic—may also have a mild blood pressure-lowering effect, according to preliminary research.

European mistletoe (Viscum album) has reduced headaches and dizziness associated with high blood pressure, according to preliminary research. Mistletoe may be taken as 0.5 ml tincture three times per day. The blood pressure-lowering effect of mistletoe is small and may take weeks to become evident. Due to possible serious side effects, European mistletoe should only be taken under the careful supervision of a physician trained in its use.

Indian snakeroot (Rauwolfia serpentina) contains powerful alkaloids, including reserpine, that affect blood pressure and heart function. Indian snakeroot has been used traditionally to treat hypertension, especially when associated with stress and anxiety. Due to possible serious side effects, Indian snakeroot should only be taken under the careful supervision of a physician trained in its use.

In animal studies oleuropein, one of the constituents of olive leaf, has decreased blood pressure and dilated arteries surrounding the heart, when given by injection or intravenously. Olive leaf has been used traditionally to treat people with hypertension, but controlled human trials are needed before a blood pressure-lowering effect can be established.

A double-blind trial reported that reishi mushrooms significantly lowered blood pressure in humans. The trial used a concentrated extract of reishi (25:1) in the amount of 55 mg three times per day for four weeks. It is unclear from the clinical report how long it takes for the blood pressure-lowering effects of reishi to be measured.

Hawthorn leaf and flower extracts have been reported to have a mild blood pressure-lowering effect in people with early stage congestive heart failure. This effect has not been studied in hypertensive people with normal heart functioning.

Human trials investigating the use of Coleus forskohlii in blood pressure reduction have yet to be conducted. However, forskolin, the active ingredient in Coleus forskohlii, has lowered blood pressure in a small, preliminary trial with people suffering from cardiomyopathy. Extracts of coleus standardized to contain 15–20% forskolin are available, but further trials are needed to determine effective levels for treating people with hypertension.

Most herbal reference books suggest that ginseng should not be used by people with hypertension. However, the results of a preliminary trial suggest that red ginseng root (Panax ginseng radix rubra) has either no effect on, or may actually slightly lower, blood pressure in hypertensive people. However, many herbalists continue to believe that people with hypertension should avoid Asian ginseng and American ginseng, and, while not a true ginseng, Siberian ginseng (eleuthero) as well.

In a controlled trial, people with hypertension received either Hibiscus tea (Hibiscus sabdariffa) or ordinary tea daily.[67] Two tablespoons of dried herb were boiled in one cup of water for 20 to 30 minutes and consumed daily for 12 days. By the final day, blood pressure was 11% lower in the treatment group, compared to only 4% in the control group.

Holistic approaches that may be helpful

Anxiety in men (but not women) has been linked to development of hypertension. Several research groups have also shown a relationship between job strain and high blood pressure in men. Some researchers have tied blood pressure specifically to suppressed aggression.

Although some kind of relationship between stress and high blood pressure appears to exist, the effects of treatment for stress remain controversial. An analysis of 26 trials reported that reductions in blood pressure caused by biofeedback or meditation were no greater than those seen with placebo. Though some stress management interventions have not been helpful in reducing blood pressure, those trials that have reported promising effects have used combinations of yoga, biofeedback, and/or meditation. Some doctors continue to recommend a variety of stress-reducing measures, sometimes tailoring them to the needs and preferences of the person seeking help.

Preliminary laboratory studies in animals and humans suggest that acupuncture may help regulate blood pressure. Most, but not all, preliminary trials also suggest that acupuncture may be an effective way to lower blood pressure. Whether blood pressure goes back up after acupuncture is discontinued remains an unsettled question.

Auricular (ear) acupressure has been reported to be an effective treatment for hypertension, though in one case the improvement was not significantly better than use of traditional herbal medicines.

Spinal manipulation may lower blood pressure (at least temporarily) in healthy people, according to most preliminary and controlled trials. However, some research suggests the effect is no better than the blood pressure-lowering effect of sham ("fake") manipulation. In hypertensive people, temporary decreases in blood pressure have also been reported after spinal manipulation. However, most, but not all, trials suggest that manipulation produces only short-term decreases in blood pressure in hypertensive people.

HIV

Acquired immunodeficiency syndrome (AIDS) is a condition in which the immune system becomes severely weakened and loses its ability to fight infections.
Although some scientists have questioned whether or not the human immunodeficiency virus (HIV) has actually been proven to cause AIDS, most researchers do believe that HIV causes AIDS.

AIDS is an extremely complex disorder, and no cure is currently available. Certain drugs appear to be capable of slowing the progression of the disease. In addition, various nutritional factors may be helpful. However, because of the complicated nature of this disorder, medical supervision is strongly recommended with regard to dietary changes and nutritional supplements. People who have been infected with HIV are hereafter referred to as "HIV-positive."

What are the symptoms of HIV and AIDS?

HIV causes a broad spectrum of clinical problems, which often mimic other diseases. Within a few weeks of infection, some people may experience flu-like signs and symptoms, including fever, malaise, rash, joint pain, and generalized swelling of the lymph nodes. These acute manifestations usually disappear, and many people remain asymptomatic for long periods. AIDS, the clinical syndrome associated with HIV infection, produces symptoms throughout the body related to opportunistic infections, tumours, and other immune-deficiency complications.

Dietary changes that may be helpful

People with AIDS often lose significant amounts of weight or suffer from recurrent diarrhoea. A diet high in protein and total calories may help a person maintain his or her body weight. In addition, whole foods are preferable to refined and processed foods. Whole foods contain larger amounts of many vitamins and minerals, and people with HIV infection tend to suffer from multiple nutritional deficiencies.

Nonetheless, no evidence currently suggests that dietary changes are curative for people with AIDS, or even that they significantly influence the course of the disease. In fact, a controlled trial comparing the efficacy of three nutritional regimens in the

prevention of weight loss in HIV-positive people found no benefit from increasing caloric intake. A 500-calorie per day caloric supplement with fatty acids plus a multivitamin and minerals did not promote increases in body weight beyond that offered by a multivitamin-mineral supplement alone.

AIDS-related weight loss and chronic diarrhoea are sometimes the result of abnormal intestinal function in the absence of an infectious organism. This condition, called "HIV enteropathy" (pronounced "en-ter-OP-a-thee"), may respond to a gluten-free diet. In a preliminary trial, men with HIV enteropathy were given a gluten-free diet for one week. During that week, the number of episodes of diarrhoea decreased by nearly 40%. When gluten-containing foods were re-introduced for a week, the diarrhoea returned. When they were eliminated a second time, again for one week, the episodes of diarrhoea were again reduced. Participants in the study also experienced significant weight gain during the gluten-free periods.

Lifestyle changes that may be helpful

Loss of strength and lean body mass are frequent complications in people with AIDS. Drug therapy with anabolic steroids is sometimes used to counteract these losses. Preliminary trials suggest that progressive resistance training (i.e., weight training) may be used as an alternative or adjunct to steroids in this disease. In a preliminary trial, people with HIV who did progressive resistance training three times per week for eight weeks had significant increases in their lean body mass. Exercise of any type three to four times per week or more has been associated with slower progression to AIDS at one year and with a slower progression to death from AIDS at one year in men.

Nutritional supplements that may be helpful

Because people with HIV infection or AIDS often have multiple nutritional deficiencies, a broad-spectrum nutritional supplement may be beneficial. In one trial, HIV-positive men who took a multivitamin-mineral supplement had slower onset of AIDS, compared with men who did not take a supplement. Use of a multivitamin by pregnant and breast-feeding Tanzanian women with HIV did not affect the risk of transmission of HIV from mother to child, either in utero, during birth, or from breast-feeding.

Selenium deficiency is an independent factor associated with high mortality among HIV-positive people. HIV-positive people who took selenium supplements experienced fewer infections, better intestinal function, improved appetite, and improved heart function (which had been impaired by the disease) than those who did not take the supplements.[11] The usual amount of selenium taken was 400 mcg per day.

Selenium deficiency has been found more often in people with HIV-related cardiomyopathy (heart abnormalities) than in those with HIV and normal heart function. People with HIV-related cardiomyopathy may benefit from selenium supplementation. In a small preliminary trial, people with AIDS and cardiomyopathy, 80% of whom were found to be deficient in selenium, were given 800 mcg of selenium per day for 15 days, followed by 400 mcg per day for eight days. Improvements in heart function were noted after selenium supplementation.[13] People wishing to supplement with more than 200 mcg of selenium per day should be monitored by a doctor.

The amino acid, N-acetyl cysteine (NAC), has been shown to inhibit the replication of HIV in test tube studies. In a double-blind trial, supplementing with 800 mg per day of NAC slowed the rate of decline in immune function in people with HIV infection. NAC

also promotes the synthesis of glutathione, a naturally-occurring antioxidant that is believed to be protective in people with HIV infection and AIDS.

The combination of glutamine, arginine, and the amino acid derivative, hydroxymethylbutyrate (HMB), may prevent loss of lean body mass in people with AIDS-associated wasting. In a double-blind trial, AIDS patients who had lost 5% of their body weight in the previous three months received either placebo or a nutrient mixture containing 1.5 grams of HMB, 7 grams of L-glutamine, and 7 grams of L-arginine twice daily for eight weeks. Those supplemented with placebo gained an average of 0.37 pounds, mostly fat, but lost lean body mass. Those taking the nutrient mixture gained an average of 3 pounds, 85% of which was lean body weight.

In a double-blind trial, the non-disease-causing yeast Saccharomyces boulardii (1 gram three times per day) helped stop diarrhoea in HIV-positive people. However, people with severely compromised immune function have been reported to develop yeast infections in the bloodstream after consuming some yeast organisms that are benign for healthy people. For that reason, people with HIV infection who wish to take Saccharomyces boulardii, brewer's yeast (Saccharomyces cerevisiae), or other live organisms should first consult a doctor.

A deficient level of dehydroepiandrosterone sulphate (DHEAS) in the blood is associated with poor outcomes in people with HIV. Large amounts of supplemental dehydroepiandrosterone (DHEA) may alleviate fatigue and depression in HIV-positive men and women. In a preliminary trial, men and women with HIV infection took 200–500 mg of DHEA per day for eight weeks. All participants initially had both low mood and low energy. After eight weeks of DHEA supplementation, 72% of the participants reported their mood to be "much improved" or "very much improved," and 81% reported having significant improvements in energy level. DHEA supplementation had no effect on CD4 cell (helper T-cell) counts or testosterone levels.

Vitamin A deficiency appears to be very common in people with HIV infection. Low blood levels of vitamin A are associated with greater disease severity and increased transmission of the virus from a pregnant mother to her infant. However, in preliminary and double-blind trials, supplementation with vitamin A failed to reduce the overall mother-to-child transmission of HIV. HIV-positive women who took 5,000 IU per day of vitamin A (as retinyl palmitate) and 50,000 IU per day of beta-carotene during the third trimester (13 weeks) of pregnancy, plus an additional single amount of 200,000 IU of vitamin A at delivery, had the same rate of transmission of HIV to their infants as those who did not take the supplement. However, lower rates of illness have been observed in the children of HIV-positive mothers when the children were supplemented with 50,000–200,000 IU of vitamin A every two to three months.

Little research has explored whether vitamin A supplements are helpful at halting disease progression. HIV-positive children given two consecutive oral supplements of vitamin A (200,000 IU in a gelcap) in the two days following influenza vaccinations had a modest but significant decrease in viral load. In one trial, giving people an extremely high (300,000 IU) amount of vitamin A one time only did not improve short-term measures of immunity in women with HIV.

Beta-carotene levels have been found to be low in HIV-positive people, even in those without symptoms. However, trials on the effect of beta-carotene supplements have

produced conflicting results. In one double-blind trial, supplementing with 300,000 IU per day of beta-carotene significantly increased the number of CD4+ cells in people with HIV infection. In another trial, the same amount of beta-carotene had no effect on CD4+ cell counts or various other measures of immune function in HIV-infected people.

In HIV-positive people with B-vitamin deficiency, the use of B-complex vitamin supplements appears to delay progression to and death from AIDS. Thiamine (vitamin B1) deficiency has been identified in nearly one-quarter of people with AIDS. It has been suggested that a thiamine deficiency may contribute to some of the neurological abnormalities that are associated with AIDS. Vitamin B6 deficiency was found in more than one-third of HIV-positive men; vitamin B6 deficiency was associated with decreased immune function in this group. In a population study of HIV-positive people, intake of vitamin B6 at more than twice the recommended dietary allowance (RDA is 2 mg per day for men and 1.6 mg per day for women) was associated with improved survival. Low blood levels of folic acid and vitamin B12 are also common in HIV-positive people.

Preliminary observations suggest a possible role for vitamin B3 in HIV prevention and treatment. A form of vitamin B3 (niacinamide) has been shown to inhibit HIV in test tube studies. However, no published data have shown vitamin B3 to inhibit HIV in animals or in people. One study did show that HIV-positive people who consume more than 64 mg of vitamin B3 per day have a decreased risk of progression to AIDS or AIDS-related death. Clinical trials in humans are required to validate these preliminary observations.

Vitamin C has been shown to inhibit HIV replication in test tubes. Intake of vitamin C by HIV-positive persons may be associated with a reduced risk of progression to AIDS. Some doctors recommend large amounts of vitamin C for people with AIDS. Reported benefits in preliminary research include greater resistance against infection and an improvement in overall well-being. The amount of vitamin C used in that study ranged from 40 to 185 grams per day. Supplementation with such large amounts of vitamin C must be monitored by a doctor. This same researcher also reports some success in using a topical vitamin C paste to treat herpes simplex outbreaks and Kaposi's sarcoma in people with AIDS.

In test-tube studies, vitamin E improved the effectiveness of the anti-HIV drug zidovudine (AZT) while reducing its toxicity. Similarly, animal research suggests that zinc and NAC supplementation may protect against AZT toxicity. It is not known whether oral supplementation with these nutrients would have similar effects in people taking AZT.

Blood levels of coenzyme Q10 (CoQ10) were also found to be low in people with HIV infection or AIDS. In a small preliminary trial, people with HIV infection took 200 mg per day of CoQ10. Eighty-three percent of these people experienced no further infections for up to seven months, and the counts of infection-fighting white blood cells improved in three cases.

Blood levels of both zinc and selenium are frequently low in people with HIV infection. Zinc supplements (45 mg per day) have been shown to reduce the number of infections in people with AIDS.

Iron deficiency is often present in HIV-positive children. While iron is necessary for normal immune function, iron deficiency also appears to protect against certain bacterial infections. Iron supplementation could therefore increase the severity of bacterial

infections in people with AIDS. For that reason, people with HIV infection or AIDS should consult a doctor before supplementing with iron.

The amino acid, glutamine, is needed for the synthesis of glutathione, an important antioxidant within cells that is frequently depleted in people with HIV and AIDS. In well-nourished people, the body usually manufactures enough glutamine to prevent a deficiency. However, people with HIV or AIDS are often malnourished and may be deficient in glutamine. In such people, glutamine supplementation may be needed, along with NAC, to maintain adequate levels of glutathione. It is not known how much glutamine is needed for that purpose; however, in other trials, 4–8 grams of glutamine per day was used. In a double-blind trial, massive amounts of glutamine (40 grams per day) in combination with several antioxidants (27,000 IU per day of beta-carotene; 800 mg per day of vitamin C; 280 mcg per day of selenium; 500 IU per day of vitamin E) were given for 12 weeks to AIDS patients experiencing problems maintaining normal weight. Those who took the glutamine-antioxidant combination experienced significant gains in body weight compared with those taking placebo. Larger trials are needed to determine the possible benefits of this nutrient combination on reducing opportunistic infections and long-term mortality.

People with AIDS have low levels of methionine. Some researchers suggest that these low methionine levels may explain some aspects of the disease process, especially the deterioration that occurs in the nervous system and is responsible for symptoms such as dementia. A preliminary trial found that methionine (6 grams per day) may improve memory recall in people with AIDS-related nervous system degeneration.

In a preliminary trial, a thymus extract known as Thymomodulin® improved several immune parameters among people with early HIV infection, including an increase in the number of T-helper cells.

Whey protein is rich in the amino acid cysteine, which the body uses to make glutathione, an important antioxidant. A double-blind trial showed that 45 grams per day of whey protein increased blood glutathione levels in a group of HIV-infected people. Test tube and animal studies suggest that whey protein may improve some aspects of immune function.

Herbs that may be helpful

Many different herbs have been shown in test tube studies to inhibit the function or replication of HIV. Few of these studies have been followed up with any kind of investigation in HIV-positive humans. Some notable exceptions to this rule are discussed below.

There are three categories of herbs used in people with HIV infection. The first are herbs that are believed to directly kill HIV (antiretroviral herbs). The second are herbs that strengthen the immune system to better withstand HIV's onslaught (immuno-modulating herbs). The third are herbs that combat opportunistic infections (antimicrobial herbs). The following table summarizes each category and herbs that belong in each. Note that some herbs fall into more than one category.

One double-blind trial has found that 990 mg per day of an extract of the leaves and stems of boxwood (Buxus sempervirens) could delay the progression of HIV infection (as measured by a decline in CD4 cell counts). No adverse effects directly attributable to the

extract were reported. Taking twice the amount of boxwood extract did not lead to further benefits and may have actually decreased its usefulness.

Liquorice has shown the ability to inhibit reproduction of HIV in test tubes. Clinical trials have shown that injections of glycyrrhizin (isolated from liquorice) may have a beneficial effect on AIDS. There is preliminary evidence that orally administered liquorice also may be safe and effective for long-term treatment of HIV infection. Amounts of liquorice or glycyrrhizin used for treating HIV-positive people warrant monitoring by a physician, because long-term use of these substances can cause high blood pressure, potassium depletion, or other problems. Approximately 2 grams of liquorice root should be taken per day in capsules or as tea. Deglycyrrhizinated liquorice (DGL) will not inhibit HIV.

An extract from stem bark latex of Sangre de Drago (Croton lechleri), an herb from the Amazon basin of Peru, has demonstrated significant anti-diarrhoeal activity in preliminary and double-blind trials. Additional double-blind research has demonstrated the extract's effectiveness for diarrhoea associated with HIV infection and AIDS. Very high amounts of this extract (350–700 mg four times daily for seven or more days) were used in the studies. Such levels of supplementation should always be supervised by a doctor. Most of this research on Sangre de Drago is unpublished, and much of it is derived from manufacturers of the formula. Further double-blind trials, published in peer-reviewed medical journals, are needed to confirm the efficacy reported in these studies.

A constituent from St. John's Wort known as hypericin has been extensively studied as a potential way to kill HIV. A preliminary trial found that people infected with HIV who took 1 mg of hypericin per day by mouth had some improvements in CD4+ cell counts, particularly if they had not previously used AZT. A small number of people developed signs of mild liver damage in this study. Another much longer preliminary trial used injectable extracts of St. John's Wort twice a week combined with three tablets of a standardized extract of St. John's Wort taken three times per day by mouth. This study found not only improvements in CD4+ counts but only 2 of 16 participants developed opportunistic infections. No liver damage or any other side effects were noted in this trial. In a later study, much higher amounts of injectable or oral hypericin (0.25 mg/kg body weight or higher) led to serious side effects, primarily extreme sensitivity to sunlight. At this point, it is unlikely that isolated hypericin or supplements of St. John's Wort extract supplying very high levels of hypericin can safely be used by people with HIV infection, particularly given St. John's Wort's many drug interactions.

Garlic may assist in combating opportunistic infections. In one trial, administration of an aged garlic extract reduced the number of infections and relieved diarrhoea in a group of patients with AIDS. Garlic's active constituents have also been shown to kill HIV in the test tube, though these results have not been confirmed in human trials.

A preliminary trial of isolated andrographolides, found in andrographis, determined that while they decreased viral load and increased CD4 lymphocyte levels in people with HIV infection, they also caused potentially serious liver problems and changes in taste in many of the participants. It is unknown whether andrographis directly killed HIV or was having an immune-strengthening effect in this trial.

Other immune-modulating plants that could theoretically be beneficial for people with HIV infection include Asian ginseng, eleuthero, and the medicinal mushrooms shiitake and reishi. One preliminary study found that steamed then dried Asian ginseng (also

known as red ginseng) had beneficial effects in people infected with HIV, and increased the effectiveness of the anti-HIV drug, AZT. This supports the idea that immuno-modulating herbs could benefit people with HIV infection, though more research is needed.

The Chinese herb bupleurum, as part of the herbal formula sho-saiko-to, has been shown to have beneficial immune effects on white blood cells taken from people infected with HIV. Sho-saiko-to has also been shown to improve the efficacy of the anti-HIV drug lamivudine in the test tube. One preliminary study found that 7 of 13 people with HIV given sho-saiko-to had improvements in immune function. Double-blind trials are needed to determine whether bupleurum or sho-saiko-to might benefit people with HIV infection or AIDS. Other herbs in sho-saiko-to have also been shown to have anti-HIV activity in the test tube, most notably Asian Scullcap. Therefore studies on sho-saiko-to cannot be taken to mean that bupleurum is the only active herb involved. The other ingredients are peony root, pinellia root, cassia bark, ginger root, jujube fruit, Asian ginseng root, Asian Scullcap root, and liquorice root.

Maitake mushrooms, which are currently being studied, contain immuno-modulating polysaccharides (including beta-D-glucan) that may be supportive for HIV infection.
A controversy has surrounded the use of Echinacea in people infected with HIV. Test tube studies initially showed that Echinacea's polysaccharides could increase levels of a substance that might stimulate HIV to spread. However, these results have not been shown to occur when Echinacea is taken orally by humans.[88] In fact, one double-blind trial found that Echinacea angustifolia root (1 gram three times per day by mouth) greatly increased immune activity against HIV, while placebo had no effect. Further studies are needed to determine the safety of using Echinacea in HIV-positive people.

The story of European mistletoe is similar to that of Echinacea. Though originally believed to be a problem based on test tube studies, preliminary human clinical trials of mistletoe injections into the skin have shown only beneficial effects. Oral mistletoe is very unlikely to have the same effects as injected mistletoe. Injectable mistletoe should only be used under the supervision of a qualified healthcare professional.

Turmeric may be another useful herb with immune effects in people infected with HIV. One preliminary trial found that curcumin, the main active compound in turmeric, helped improve CD4+ cell counts. The amount used in this study was 1 gram three times per day by mouth. These results differed from those found in a second preliminary trial using 4.8 or 2.7 grams of curcumin daily. In that study, there was no apparent effect of curcumin on HIV replication rates.

Cat's claw is another immuno-modulating herb. Standardized extracts of cat's claw have been tested in small, preliminary trials in people infected with HIV, showing some benefits in preventing CD4 cell counts from dropping and in preventing opportunistic infections. Further study is needed to determine whether cat's claw is truly beneficial for people with HIV infection or AIDS.

A 5% solution of tea tree oil has been shown to eliminate oral thrush in people with AIDS, according to one preliminary trial. The volunteers in the study swished 15 ml of the solution in their mouths four times per day and then spit it out. This may cause mild burning for a short period of time after use.

A trial of a combination naturopathic protocol (consisting of multiple nutrients, liquorice, lomatium, a combination Chinese herbal product, lecithin, calf thymus extract, lauric acid monoglycerol ester, and St. John's Wort) showed a possible slowing of the progression of mild HIV infection and a reduction of some symptoms. Because there was no placebo group in this trial, the findings must be considered preliminary; controlled trials are needed to determine whether this protocol is effective.

Hives

Hives (urticaria) is an allergic reaction in the skin characterized by white or pink welts or large bumps surrounded by redness.

These welts are known as wheal and flare lesions and are caused primarily by the release of histamine (an allergy mediator) in the skin. About 50% of people with chronic hives develop angioedema—a deeper, more serious form of hives involving the tissue below the surface of the skin.

While the basic cause of hives involves the release of histamine from white blood cells, what actually triggers this release can be a variety of factors, such as physical contact or pressure, heat (prickly heat rash), cold, water, autoimmune reactions, infectious organisms (e.g., hepatitis B virus, Candida albicans, and streptococcal bacteria), and allergies or sensitivities to drugs (especially antibiotics and aspirin), foods, and food additives.

What are the symptoms of hives?

Symptoms include an itchy skin rash with red bumps that can appear on the face, trunk of the body, and, sometimes, on the scalp, hands, or feet. Individual lesions usually last less than 24 hours and can change shape, fade, and then rapidly reappear. People with hives may also have wheezing, or swelling of the eyelids, lips, tongue, or throat.

Dietary changes that may be helpful

Allergy to foods and food additives is a common cause of hives, especially in chronic cases. The foods most often reported to trigger hives are dairy products, eggs, chicken, cured meat, alcoholic beverages, chocolate, citrus fruits, shellfish, and nuts. Food additives that have been shown to trigger hives include colorants (azo dyes), flavourings (salicylates), artificial sweeteners (aspartame), preservatives (benzoates, nitrites, sorbic acid), antioxidants (hydroxytoluene, sulphite, gallate), and emulsifiers/stabilizers (polysorbates, vegetable gums). Numerous clinical studies demonstrate that diets that are free of foods or food additives that commonly trigger allergic reactions typically produce significant reductions in symptoms in 50–75% of people with chronic hives. People with hives not clearly linked to a known cause should discuss the possibility of food allergies with a doctor.

Nutritional supplements that may be helpful

In theory, high amounts of vitamin C might help people with hives by lowering histamine levels. Amounts of at least 2,000 mg daily appear necessary to produce these effects. No research trials have yet explored the clinical effects of vitamin C supplementation in people with hives.

Vitamin B12 has been reported to reduce the severity of acute hives as well as to reduce the frequency and severity of outbreaks in chronic cases. The amount used in these reported case studies was 1,000 mcg by injection per week. Whether taking B12 supplements orally would have these effects remains unknown. On rare occasions, vitamin B12 injections cause hives in susceptible people. Whether such reactions are actually triggered by exposure to large amounts of vitamin B12 or to preservatives and other substances found in most vitamin B12 injections remains unclear.

According to preliminary studies from many years ago, lack of hydrochloric acid (HCl) secretion by the stomach was associated with chronic hives, presumably as a result of increasing the likelihood of developing food allergies. In one such study, 31% were diagnosed as having achlorhydria (no gastric acid output), and 53% were shown to be hypochlorhydric (having low gastric acid output). In a related study, treatment with an HCl supplement and a vitamin B-complex supplement helped to treat people with hives. Betaine HCl is the most common hydrochloric acid-containing supplement; it comes in tablets or capsules measured in grains or milligrams. One or more tablets or capsules, each containing 5–10 grains (325–650 mg) are typically taken with a meal that contains protein. Diagnosis of a deficiency of HCl and supplementation with HCl should be supervised by a doctor.

Herbs that may be helpful

Two components of green tea, the polyphenols epigallocatechin (EGC) and epicatechin gallate (ECG), are reported to have an antihistamine effect. Some doctors recommend approximately 3 cups of green tea per day or about 3 grams of soluble components providing roughly 240 to 320 mg of polyphenols, although no human trials have studied the effects of green tea in people with hives.

Holistic approaches that may be helpful

Psychological stress is often reported as a triggering factor in people with chronic hives. Stress may play an important role by decreasing the effectiveness of immune system mechanisms that would otherwise block allergic reactions. In a small preliminary trial of people with chronic hives, relaxation therapy and hypnosis were shown to provide significant benefit. People were given an audio tape and asked to use the relaxation techniques described on the tape at home. At a follow-up examination 5 to 14 months after the initial session, six people were free of hives and an additional seven reported improvement.

Headache (Migraine)

Migraines are very painful headaches that usually begin on only one side of the head and may become worse with exposure to light.

What are the symptoms of migraine?

Migraines are commonly preceded by warning symptoms (prodrome), that may include depression, irritability, restlessness, loss of appetite, and a characteristic “aura”—usually a visual disturbance such as flashing lights or a localized area of blindness that follows the appearance of brilliantly coloured shimmering lights. Migraines may also involve nausea, vomiting, and changes in vision.

Dietary changes that may be helpful

Some migraine sufferers have an abnormality of blood-sugar regulation known as reactive hypoglycaemia. In these people, improvement in the frequency and/or severity of migraines resulted from dietary changes designed to control the blood sugar. For the treatment of reactive hypoglycaemia, many healthcare practitioners recommend strict avoidance of refined sugar, caffeine, and alcohol, and eating small, frequent meals (such as six times per day).

Migraines can be triggered by allergies and may be relieved by identifying and avoiding the problem foods. Uncovering these food allergies with the help of a doctor is often a useful way to prevent migraines. In children suffering migraines who also have epilepsy, there is evidence that eliminating offending foods will also reduce the frequency of seizures.

Some people who suffer from migraines also react to salt, and reducing intake of salt is helpful for some of these people. Some people with migraines have been reported to improve after removing all cows' milk protein from their diet. The presence of lactose intolerance was found to be a strong predictor of improvement in that study. In addition, some migraine sufferers have an impaired capacity to break down tyramine, a substance found in many foods that is known to trigger migraines in some people. People with this defect are presumably more sensitive than others to the effects of tyramine. Ingestion of the artificial sweetener, aspartame, has also been reported to trigger migraines in a small proportion of people.

L-tryptophan, an amino acid found in protein-rich foods, is converted to serotonin, a substance that might worsen some migraines. For that reason, two studies have investigated the effect of a low-protein diet on migraines; in these studies some people experienced a reduction in migraine symptoms. However, in a small double-blind trial, four of eight people had marked improvement in their migraine symptoms while receiving L-tryptophan (500 mg every six hours). Moreover, some preliminary evidence discussed below suggests that 5-hydroxytryptophan, a supplement related to L-tryptophan, may reduce symptoms in some migraine sufferers. Therefore, the idea that a low-protein diet would help migraine patients due to its low L-tryptophan content appears doubtful.

Lifestyle changes that may be helpful

Some doctors have found that reactions to smoking and birth control pills can be additional contributing factors in migraines.

Infection with Helicobacter pylori (H. pylori, an organism that causes peptic ulcers) may predispose people to migraine headaches. In a preliminary trial, 40% of migraine sufferers were found to have H. pylori infection. Intensity, duration, and frequency of attacks of migraine were significantly reduced in all participants in whom the H. pylori was eradicated. Controlled clinical trials are needed to confirm these preliminary results.

Nutritional supplements that may be helpful

Compared with healthy people, people with migraines have been found to have lower blood and brain levels of magnesium. Preliminary research in a group of women (mostly premenopausal) showed that supplementing with magnesium (usually 200 mg per day) reduced the frequency of migraines in 80% of those treated. In a double-blind trial of 81 people with migraines, 600 mg of magnesium per day was significantly more effective than placebo at reducing the frequency of migraines. Another double-blind trial found

that taking 360 mg of magnesium per day decreased the number of days on which premenstrual migraines occurred. One double-blind trial found no benefit from 486 mg of magnesium per day for three months. However, that study defined improvement according to extremely strict criteria, and even some known anti-migraine drugs have failed to show benefit when tested using those criteria. Intravenous magnesium has been reported to produce marked and sometimes complete symptom relief during acute migraines, usually within 15 minutes or less.

One group of researchers treated 49 migraine patients with large amounts of vitamin B2 (400 mg per day). Both the frequency and severity of migraines decreased by more than two-thirds. In a follow-up three-month, double-blind trial, the same researchers reported that 59% of patients assigned to receive vitamin B2 had at least a 50% reduction in the number of headache days, whereas only 15% of those assigned to receive a placebo experienced that degree of improvement. The effects of vitamin B2 were most pronounced during the final month of the trial.

In a preliminary trial, administration of 1 mg of vitamin B12 per day (by the intranasal route) for 3 months reduced the frequency of migraine attacks by at least 50% in 10 of 19 people with recurrent migraines. A placebo-controlled study is needed to determine how much of this improvement was due to a placebo effect.

The cause of migraine headache is believed to be related to abnormal serotonin function in blood vessels, and 5-hydroxytryptophan (5-HTP, which is converted by the body into serotonin) may affect this abnormality. In one study, 40 people with recurrent migraines received either 5-HTP (200 mg per day) or methysergide (a drug used to prevent migraines) for 40 days. Both compounds reduced the frequency of migraines by about 50%. Larger amounts of 5-HTP (600 mg per day) were also found to be as effective as medications for reducing migraine headache attacks in adults in two double-blind trials. Migraine attacks were reduced in frequency, severity, and duration in 90% of those taking 400 mg per day of 5-HTP in a double-blind placebo-controlled trial, though another trial found no benefit of 5-HTP. In another controlled study, 400 mg of dl-5-HTP (another form of 5-HTP) led to reduced consumption of pain-killing drugs and pain scores after one to two months. Children who suffered from migraines and had problems sleeping responded well to a daily amount of 5-HTP equal to 20 mg for every 10 pounds of body weight in a controlled trial, though an earlier study showed 5-HTP had no better effect than placebo for children with migraines.

Fish oil containing EPA and DHA has been reported to reduce the symptoms of migraine headache in a double-blind trial using 1 gram of fish oil per 10 pounds of body weight. Fish oil may help because of its effects in modifying prostaglandins (hormone-like substances made by the body).

Taking large amounts of the combination of calcium (1,000 to 2,000 mg per day) and vitamin D has been reported to produce a marked reduction in the incidence of migraines in several women. However, the amount of vitamin D given to these women (usually 50,000 IU once a week), can cause adverse reactions, particularly when used in combination with calcium. This amount of vitamin D should be used only under medical supervision. Doctors often recommend that people take 800 to 1,200 mg of calcium and 400 IU of vitamin D per day. However, it is not known whether theses amounts would have an effect on migraines.

In a preliminary trial, supplementation of migraine sufferers with 150 mg per day of coenzyme Q10 for three months reduced the average number of days with migraine headaches by 60%.[45] A placebo-controlled trial is needed to rule out the possibility that this improvement was due to a placebo effect.

Preliminary research also suggests that oral supplements of SAMe (S-adenosyl-L-methionine) may reduce symptoms for some migraine sufferers.
The function of the pineal gland and its cyclic secretion of melatonin may be disturbed in people with migraine headaches. Preliminary evidence suggests that 5 mg per day of melatonin, taken 30 minutes before bedtime, may reduce symptoms of migraine headache.

Herbs that may be helpful

The most frequently used herb for the long-term prevention of migraines is feverfew. Three double-blind trials have reported that continuous use of feverfew leads to a reduction in the severity, duration, and frequency of migraine headaches, although one double-blind trial found feverfew to be ineffective.

Studies suggest that taking standardized feverfew leaf extracts that supply a minimum of 250 mcg of parthenolide per day is most effective. Results may not be evident for at least four to six weeks. Although there has been recent debate about the relevance of parthenolide as an active constituent, it is best to use standardized extracts of feverfew until research proves otherwise.

Anecdotal evidence suggests ginger may be used for migraines and the accompanying nausea. Ginkgo Biloba extract may also help because it inhibits the action of a substance known as platelet-activating factor, which may contribute to migraines. No clinical trials have examined its effectiveness in treating migraines, however.

A standardized extract of butterbur (Petasites hybridus) was shown in a double-blind trial to reduce the incidence of migraine attacks for three months. People in the study took 50 mg of the extract twice per day. It should be noted that butterbur contains pyrrolizidine alkaloids (PAs)—constituents that are potentially harmful to the liver. The extract used in this study lowered the amount of PAs to a level deemed safe by the German health authorities.

There is preliminary evidence that capsaicin, the active constituent of cayenne, can be applied inside the nose as a treatment for acute migraine. However, as intranasal application of capsaicin produces a burning sensation, it should be used only under the supervision of a doctor familiar with its use.

Holistic approaches that may be helpful

Many reports have shown acupuncture to be useful in the treatment of migraines. In a preliminary trial, 18 of 26 people suffering from migraine headaches demonstrated an improvement in symptoms following therapy with acupuncture; they also had a 50% reduction in the use of pain medication. Previous preliminary trials have demonstrated similar results, which have also been confirmed in placebo-controlled trials. Improvement has been maintained at one and three years of follow-up. In preliminary research, patients suffering from chronic headaches of various types (including migraine, cluster, or tension headaches) have also experienced an improvement in symptoms following acupuncture treatment. In a trial comparing acupuncture to traditional drug therapy, a

significantly greater cure rate was achieved in the acupuncture group relative to the drug treatment group (75% vs. 34%).

Dry needling is a form of acupuncture that does not utilize traditional Chinese medicine diagnosis or traditional acupuncture points for treatment. Instead, acupuncture needles are inserted into painful muscle areas (trigger points). A study of 85 patients comparing dry needle acupuncture to conventional drug therapy found a similar reduction in frequency and duration of migraine attacks in both treatment groups.

Percutaneous Electrical Nerve Stimulation (PENS) is an electrical nerve stimulation technique that has become increasingly popular in the complementary and alternative management of pain syndromes. PENS involves insertion of needle probes, similar to acupuncture, at specific therapeutic points and then applying low levels of electrical current. In one study, PENS was significantly more effective than needles alone at relieving pain in migraine headaches (tension headaches and post-traumatic headaches were also improved).

Practitioners of manipulation report success in treating migraine with manipulation. Migraine sufferers are reported to often have neck pain, tenderness of the spinal joints of the neck, and limited ability to move the neck, all of which suggest the presence of neck problems that could respond to manipulation. Two preliminary trials reported significant benefit to 75–80% of migraine patients treated with manipulation, while a third preliminary trial reported reductions in headache frequency and duration, nausea, and sensitivity to light one year after the completion of a two-month course of manipulation. A controlled trial compared three types of manipulation and found all three provided significant improvement in headache frequency, severity, and duration. Another controlled trial compared two months of manipulation to sham (fake) manipulation and to placebo treatment with a non-functioning electrical unit. People in the manipulation group had significantly more improvement of headache frequency and duration, and of ability to function in daily life; they also used less medication. The largest controlled trial to date compared eight weeks of manipulation, drug therapy, or both treatments in combination. Manipulation was as effective as the medication in reducing an overall score of migraine suffering, but had fewer reported side effects.

Tension Headache

A tension-type headache is common and typically experienced as a dull, non-throbbing pain in the back of the neck or in a “headband” distribution. It may be associated with tender nodules in the neck called trigger-points, or with tenderness in the muscles around the head.

What are the symptoms of tension headaches?

People with a headache may have symptoms including uncomfortable sensations described as pain, throbbing, aching, dullness, heaviness, and tightness in the head. People with a headache may also experience discomfort that is often worsened by movement or pressure and may be associated with irritability, problems sleeping, and fatigue.

Lifestyle changes that may be helpful

Tension-type headaches often occur more frequently and may become more severe during or following times of mental or emotional stress. Several controlled studies have found tension-type headache sufferers to report higher levels of stress, and to have significantly higher levels of depression or anxiety, significantly greater levels of suppressed anger, or significantly greater muscle tension than those without headaches. Minimizing stress and getting enough sleep and regular exercise are often recommended to people with tension-type headaches. However, no research has investigated the effectiveness of these lifestyle changes.

One controlled study that included patients with muscle-contraction headache as well as other types of headache, revealed that smokers had significantly more severe headache episodes than non-smokers. Although other studies have not found an association between smoking and headaches, stopping smoking is always a good idea for many health reasons.

Nutritional supplements that may be helpful

L-5-hydroxytryptophan (5-HTP) may be helpful for tension-type headaches. A recent double-blind study of adults with chronic tension-type headaches found 300 mg per day of 5-HTP reduced the number of headache days by 36%, but this was not significantly different from the 29% reduction in the placebo group. (Headaches often improve significantly even when an inactive [placebo] treatment is given). Headache severity was also similarly reduced by either 5-HTP or placebo. In this study, 5-HTP was significantly superior to placebo only in reducing the need for pain-relieving medications during headaches. Previous double-blind research studied 5-HTP in groups of patients suffering from many different types of headache, including some with tension-type headaches. Results from these studies also found substantial, but no significant benefits of 5-HTP compared with placebo using either 400 mg per day in adults or 100 mg per day in children.

Herbs that may be helpful

A preliminary report suggested that peppermint oil has relaxing and pain relieving effects, and may be useful as a topical remedy for tension-type headache. In a double-blind study, spreading a 10% peppermint oil solution across the temples three times over a 30-minute period was significantly better than placebo and as effective as acetaminophen in reducing headache pain. Similar use of an ointment combining menthol and other oils related to peppermint oil was also as effective as pain relieving medication and superior to placebo in another double-blind study.

Holistic approaches that may be helpful

Studies treating tension-type headache with acupuncture have had mixed results. Two controlled trials of acupuncture compared to “fake” acupuncture found either significantly more pain reduction from real acupuncture or no difference between the two treatments. Two trials comparing acupuncture to traditional physical therapy (relaxation techniques, self-massage, cold therapy, transcutaneous electrical nerve stimulation [TENS], stretching, and/or preventive education) in tension-type headache patients found similar improvements from either treatment. Three controlled acupuncture trials treated patients with various types of headaches, including tension headache. Two of these studies, but not the third, found acupuncture significantly more effective.

Two preliminary studies reported benefits from using finger pressure on specific acupuncture points (acupressure) to relieve tension-type headache pain in some patients. However, no controlled research on this approach has been done.

Spinal manipulation may also help some tension-type headache sufferers. Several preliminary studies report reduction in frequency and severity of tension-type headaches with spinal manipulation. A controlled trial compared spinal manipulation to drug therapy for tension-type headaches. During the treatment period, both groups improved at similar significant rates, although the manipulation group complained of far fewer side effects. After a month following the end of treatment, only the manipulation group showed continued improvement. In another controlled trial, spinal manipulation resulted in fewer headache hours each day, decreased use of analgesics, and less intense pain per episode compared with massage. A third controlled study reported that spinal manipulation with muscle massage was equally as effective as massage plus a "fake" laser treatment, suggesting that manipulation did not provide additional benefit.

As mentioned above, two controlled studies found physical therapy (relaxation techniques, self-massage, cold therapy, TENS, stretching, and/or preventive education) as useful as acupuncture in significantly reducing headache pain and frequency. A preliminary study also found that physical therapy, consisting of posture education, home exercises, massage, and stretching of the neck muscles, significantly improved tension headaches up to 12 months after treatment ended. Another preliminary study of massage, including deep penetrating techniques, reported significantly decreased pain in patients with chronic tension headache and neck pain. A controlled study of headache patients with muscle spasm in the neck and shoulders found that adding TENS to physical therapy (consisting of heat packs, massage, and ultrasound) brought a significantly faster and greater decline in headaches than physical therapy alone.

Several controlled trials utilizing electromyogram (EMG)-biofeedback (which teaches people how to mentally relax their neck or head muscles) have shown this treatment to be helpful in about 50% of tension-type headache sufferers, both in adults and in children and adolescents. Progressive muscle relaxation is another muscle relaxation technique that has significantly reduced tension-type headache in controlled studies of adults, and children and adolescents.

Relaxation with techniques for stress management was found to be significantly better than drug therapy in a controlled trial of chronic tension-type headache sufferers, although about half of all subjects continued to have headaches three to four days per week after the end of treatment.

Hypnotherapy was found to significantly reduce headache intensity and duration in chronic tension-type headache sufferers in one controlled trial.

A large controlled study of tension headache patients compared relaxation therapies (including progressive muscle relaxation, hypnosis, and cognitive psychotherapy) with EMG-biofeedback, and found biofeedback to be significantly more effective than relaxation in decreasing headache pain and frequency.

In a controlled trial, therapeutic touch, a type of hands-on healing, was found to significantly reduce tension headache pain for four hours following treatment. No further research has been done on this approach.

Reflexology, a specific treatment involving massage of various reflex zones on the feet, has only been investigated as a treatment for tension-type headache in one preliminary trial. A majority of people treated in this study reported being helped by this technique.
A controlled trial of homeopathy in headache patients, including tension-type headache, found no significant benefit of homeopathy compared to a placebo group.

Indigestion

"Indigestion" refers to any number of gastrointestinal complaints, which can include gas (belching, flatulence, or bloating) and upset stomach. "Heartburn" refers to a burning feeling that can be caused by stomach acid regurgitating into the oesophagus from the stomach, by gastritis (inflammation of the lining of the stomach), or by an ulcer of the stomach or duodenum (also called peptic ulcer). "Low stomach acidity" refers to the inability to produce adequate quantities of stomach acid that will affect digestion and absorption of nutrients.

In some cases, such as lactose intolerance, symptoms of indigestion are due to a specific cause that requires specific treatment. Sometimes symptoms associated with indigestion are caused by diseases unrelated to the gastrointestinal tract. For example, ovarian cancer may cause a sensation of bloating. Anyone with symptoms of indigestion should be properly diagnosed by a healthcare professional before assuming that the information below is applicable to their situation.

The most common cause of heartburn is gastroesophageal reflux disease (GERD), in which the sphincter between the oesophagus and the stomach is not functioning properly. Another, related cause of heartburn is hiatal hernia, in which a small portion of the stomach protrudes through the aforementioned sphincter.

According to Jonathan Wright, MD, another cause of heartburn can be too little stomach acid. This may seem to be a paradox, but based on the clinical experience of a few doctors such as Dr. Wright, supplementing with betaine HCl (a compound that contains hydrochloric acid) often relieves the symptoms of heartburn and improves digestion, at least in people who have hypochlorhydria (low stomach acid). The amount of betaine HCl used varies with the size of the meal and with the amount of protein ingested. Typical amounts recommended by doctors range from 600 to 2,400 mg per meal. Use of betaine HCl should be monitored by a healthcare practitioner and should be considered only for indigestion sufferers who have been diagnosed with hypochlorhydria.

Medical researchers since the 1930s have been concerned about the consequences of hypochlorhydria. While all the health consequences are still not entirely clear, some have been well documented.

Many minerals and vitamins appear to require adequate concentrations of stomach acid to be absorbed optimally—examples are iron, zinc, and B-complex vitamins, including folic acid. People with achlorhydria (no stomach acid) or hypochlorhydria may therefore be at risk of developing various nutritional deficiencies, which could presumably contribute to the development of a wide range of health problems.

One of the major functions of stomach acid is to initiate the digestion of large protein molecules. If this digestive function is not performed efficiently, incompletely digested

protein fragments may be absorbed into the bloodstream. The absorption of these large molecules may contribute to the development of food allergies and immunological disorders.

In addition, stomach acid normally provides a barrier against bacteria, fungi, and other organisms that are present in food and water. People with inadequate stomach acidity may therefore be at risk of having "unfriendly" microorganisms colonize their intestinal tract. Some of these organisms produce toxic substances that can be absorbed by the body.

Some researchers have found that people with certain diseases are more likely to have an inability to produce normal quantities of stomach acid. However, this does not mean these diseases are caused by too little stomach acid. Jonathan Wright, MD, usually tests patients' stomach acid if they suffer from food allergies, arthritis (both rheumatoid arthritis and osteoarthritis), pernicious anaemia (too little vitamin B12), asthma, diabetes, vitiligo, eczema, tic douloureux, Addison's disease, celiac disease, lupus erythematosus, or thyroid disease.

What are the symptoms of indigestion?

The symptoms of indigestion or upset stomach may include painful or burning sensations in the upper abdomen, bloating, belching, diffuse abdominal pain, heartburn, passing gas, nausea, and occasionally vomiting. The appearance of these symptoms is often associated with eating.

Dietary changes that may be helpful

Doctors have observed that heartburn and indigestion may be relieved in some people by avoiding or reducing the intake of caffeine and alcohol. In addition, some people with symptoms of indigestion appear to have food allergies or intolerances. Avoiding such foods may improve digestive complaints in those people. While most doctors believe there is an important connection between diet and intestinal symptoms, there are few published data documenting such associations. Dietary modifications should be undertaken with the help of a healthcare practitioner.

People who eat too fast or fail to chew their food adequately may also experience symptoms of indigestion or heartburn.

Nutritional supplements that may be helpful

Lipase, a pancreatic enzyme, aids in the digestion of fats and may improve digestion in some people. In a double-blind trial, a timed-release form of pancreatic enzymes was shown to significantly reduce gas, bloating, and fullness after a high-fat meal. Participants in this study took one capsule immediately before the meal and two capsules immediately after the meal. The three capsules together provided 30,000 USP units of lipase, 112,500 USP units of protease, and 99,600 USP units of amylase. However, the amount of pancreatic enzymes needed may vary from person to person, and should be determined with the help of a doctor.

Vitamin B12 supplementation may be beneficial for a subset of people suffering from indigestion: those with delayed emptying of the stomach contents in association with Helicobacter pylori infection and low blood levels of vitamin B12. In a double-blind study of people who satisfied those criteria, treatment with vitamin B12 significantly reduced symptoms of dyspepsia and improved stomach-emptying times.

Herbs that may be helpful

Three major categories of herbs are used to treat indigestion when no cause for the condition is known: bitters (digestive stimulants), carminatives (gas-relieving herbs), and demulcents (soothing herbs). The effects of these different categories on heartburn and low stomach acid will be discussed individually. Although there is overlap in the conditions, the categories are helpful.

Bitter herbs are thought to stimulate digestive function by increasing saliva production and promoting both stomach acid and digestive enzyme production. As a result, they are particularly used when there is low stomach acid but not in heartburn (where too much stomach acid could initially exacerbate the situation). These herbs literally taste bitter. Some examples of bitter herbs include greater celandine, wormwood, and gentian. Bitters are generally taken either by mixing 1–3 ml tincture into water and sipping slowly 10–30 minutes before eating, or by making tea, which is also sipped slowly before eating.

A double-blind study found that a standardized extract of greater celandine could relieve symptoms of indigestion (such as abdominal cramping, sensation of fullness, and nausea) significantly better than placebo. The study employed an extract standardized to 4 mg of chelidonine per capsule and gave 1–2 tablets three times daily for six weeks. However, recent reports of hepatitis following intake of greater celandine have raised concerns about its safety for treating indigestion.

Very little published research is available on the traditional uses of bitter orange as a digestive aid and sedative. The German Commission E has approved the use of bitter orange for loss of appetite and dyspeptic ailments. One test tube study showed bitter orange to potently inhibit rotavirus (a cause of diarrhoea in infants and young children). Bitter orange, in an herbal combination formula, reportedly normalized stool function and completely eased intestinal pain in 24 people with non-specific colitis and, again in an herbal combination formula, normalized stool function in another 32 people with constipation.

Artichoke, in addition to being an edible plant, is a mild bitter. Extracts of artichoke have been repeatedly shown in double-blind research to be beneficial for people with indigestion. Artichoke is particularly useful when the problem is lack of bile production by the liver. Extracts providing 500–1,000 mg per day of cynarin, the main active constituent of artichoke, are recommended by doctors.

Wormwood is sometimes used in combination with carminative herbs for people with indigestion. One double-blind trial found that a combination with peppermint, caraway, and fennel was useful in reducing gas and cramping in people with indigestion. Other bitters are gentian, dandelion, blessed thistle, yarrow, devil's claw, bitter orange, bitter melon, juniper, andrographis, prickly ash, and centaury. The amounts used are the same as the general recommendations for bitters when they are employed for the treatment of indigestion.

Some bitters widely used in traditional medicine in North America include yarrow, yellow dock, goldenseal, Oregon grape, and vervain. Oregon grape's European cousin barberry has also traditionally been used as a bitter. Animal studies indicate that yarrow, barberry,

and Oregon grape, in addition to stimulating digestion like other bitters, may relieve spasms in the intestinal tract.

Boldo has been used in South America for a variety of digestive conditions, although this may have stemmed from its impact on intestinal infections or liver function. Studies specifically showing a benefit from taking boldo in people with indigestion and heartburn have not been performed. Picrorhiza, from India, has a similar story to that of boldo. While it is clearly a bitter digestive stimulant, human studies to confirm this have not yet been completed.

Horehound contains a number of constituents, including alkaloids, flavonoids, diterpenes (e.g., marrubiin), and trace amounts of volatile oils. The major active constituent marrubiin and possibly its precursor, premarrubiin, are herbal bitters that increase the flow of saliva and gastric juice, thereby stimulating the appetite. Similar to horehound, elecampane has been used by herbalists to treat people with indigestion.

Carminatives (also called aromatic digestive tonics or aromatic bitters) may be used to relieve symptoms of indigestion, particularly when there is excessive gas. It is believed that carminative agents work, at least in part, by relieving spasms in the intestinal tract.

Among the most notable and well-studied carminatives are peppermint, fennel, and caraway. Double-blind trials have shown that combinations of peppermint and caraway oil and a combination of peppermint, fennel, caraway, and wormwood have been found to reduce gas and cramping in people with indigestion. Generally, 3–5 drops of natural essential oils or 3–5 ml of tincture of any of these herbs, taken in water two to three times per day before meals, can be helpful. Alternately, a tea can be made by grinding 2–3 teaspoons of the seeds of fennel or caraway or the leaves of peppermint, and then simmering them in a cup of water (covered) for ten minutes. Drink three or more cups per day just after meals.

Linden also has a long tradition of use for indigestion. Older clinical trials have shown that linden flower tea can help people who suffer from upset stomach or from excessive gas that causes the stomach to push up and put pressure on the heart (also known as the gastro cardiac syndrome.) The reputed antispasmodic action of linden, particularly in the intestines, has been confirmed in at least one human trial. Linden tea is prepared by steeping 2–3 tsp of flowers in a cup of hot water for 15 minutes. Several cups per day are recommended.

In a double-blind trial, the spice turmeric was found to relieve indigestion. Two capsules containing 250 mg turmeric powder per capsule were given four times per day.

Chamomile (German chamomile or Matricaria recutita) is effective in relieving inflamed or irritated mucous membranes of the digestive tract. Since heartburn sometimes involves reflux of stomach acid into the oesophagus, the anti-inflammatory properties of chamomile may also be useful. In addition, chamomile promotes normal digestion. However, modern studies to prove chamomile beneficial for people with heartburn or indigestion are lacking. Roman chamomile (Anthemis nobilis) has not been studied for indigestion though it has traditionally been used similarly to German chamomile.

Typically taken in tea form, chamomile is recommended three to four times per day between meals. Chamomile tea is prepared by pouring boiling water over dried flowers,

and steeping for several minutes. Alternatively, 3–5 ml of chamomile tincture may be added to hot water or 2–3 grams of chamomile in capsule or tablet form may be taken three to four times per day between meals.

Lemon balm is another carminative herb used traditionally for indigestion. Lemon balm, usually taken as tea, is prepared by steeping 2–3 teaspoons of leaves in hot water for 10 to 15 minutes in a covered container. Three or more cups per day are consumed immediately after meals. Three to five millilitres of tincture can also be used three times per day.

There are numerous other carminative herbs, including European angelica root (Angelica archangelica), anise, Basil, cardamom, cinnamon, cloves, coriander, dill, ginger, oregano, rosemary, sage, lavender, and thyme. Many of these are common kitchen herbs and thus are readily available for making tea to calm an upset stomach. Rosemary is sometimes used to treat indigestion in the elderly by European herbal practitioners. The German Commission E monograph suggests a daily intake of 4–6 grams of sage leaf. Pennyroyal is no longer recommended for use in people with indigestion, however, due to potential side effects.

Demulcents are the third category of herbs used to treat indigestion and heartburn. These herbs seem to work by decreasing inflammation and forming a physical barrier against stomach acid or other abdominal irritants. Examples of demulcent herbs include ginger, liquorice, and slippery elm.

Ginger is a spice well known for its traditional use as a treatment for a variety of gastrointestinal complaints, ranging from flatulence to ulcers. Ginger has anti-inflammatory and anti-nausea properties. Ginger has been shown to enhance normal, spontaneous movements of the intestines that aid digestion.

Liquorice protects the mucous membranes lining the digestive tract by increasing the production of mucin, a compound that protects against the adverse effects of stomach acid and various harmful substances. The extract of liquorice root that is most often used by people with indigestion is known as deglycyrrhizinated liquorice (DGL). Glycyrrhizin, which occurs naturally in liquorice root, has cortisone-like effects and can cause high blood pressure, water retention, and other problems in some people. When the glycyrrhizin is removed to form DGL, the liquorice root retains its beneficial effects against indigestion, while the risk of side effects is greatly reduced. The usual suggested amount of DGL is one or two chewable tablets (250–500 mg per tablet), chewed and swallowed 15 minutes before meals and one to two hours before bedtime. Although many research trials show that DGL is helpful for people with peptic ulcers, the use of DGL for heartburn and indigestion is based primarily on anecdotal information.

The mucilage content in slippery elm appears to act as a barrier against the damaging effects of acid on the oesophagus in people with heartburn. It may also have an anti-inflammatory effect locally in the stomach and intestines. Two or more tablets or capsules (typically 400–500 mg each) may be taken three to four times per day. Alternatively, a tea is made by boiling 1/2–2 grams of the bark in 200 ml of water for 10 to 15 minutes, which is then cooled before drinking; three to four cups a day can be used. Tincture (5 ml three times per day) may also be taken but is believed to be less helpful. Marshmallow and bladderwrack may be used the same way as slippery elm.

Rooibos is traditionally used as a tea as a digestive aid. Unfortunately, no clinical trials have yet been published on this herb, so its efficacy is still unknown. Typically 1 to 4 teaspoons (5 to 20 mg) of rooibos is simmered in one cup of water (236 ml) for up to 10 minutes. Three cups of this tea can be drunk per day. Three cups of this tea can be drunk per day.

People in the south-western United States and northern Mexico have long used chaparral tea to help calm upset stomachs. It is unclear into which of the above categories—if any—chaparral fits. This strong tasting tea was used only in small amounts. Modern research has not confirmed the usefulness of chaparral for indigestion, and there are serious concerns about the safety of improper internal use of this herb. Before taking chaparral, consult with a knowledgeable healthcare professional.

Infection

Infection is the result of invasion of the body by microorganisms, including bacteria, viruses, or fungi.

Not all microorganisms cause infections in the body, and exposure to a disease-causing micro organism does not always result in symptoms. The immune system plays a large role in determining the body's ability to fight off infection.

Some examples of infection are common cold/sore throat, influenza, cough, recurrent ear infections, urinary tract infection, yeast infection, athlete's foot, cold sores, HIV, shingles, and parasites.

What are the symptoms of infection?

Symptoms of infection include localized warmth, redness, swelling, discharge, foul-smelling odour, and pain to the touch. In more serious cases, symptoms may also include fever, chills, nausea, vomiting, diarrhoea, and fatigue.

Dietary changes that may be helpful

Nutrition is a major contributor to the functioning of the immune system, which in turn influences whether or not the body is resistant to infection. Specifically, it makes sense to restrict sugar, because sugar interferes with the ability of white blood cells to destroy bacteria. Alcohol also interferes with a wide variety of immune defences, and excessive dietary fat reduces natural killer cell activity.[3] However, there is no research investigating whether reducing sugar, alcohol, or fat intake decreases the risk of infection or improves healing.

Allergy, including food allergy, has been suggested to predispose people to recurrent infection, and many doctors consider allergy treatment for people with recurrent infections. The links between allergy and ear infections, urinary tract infections in children, and yeast vaginitis in women have been documented.

Lifestyle changes that may be helpful

Stress can depress the immune system, thus increasing the body's susceptibility to infection. Coping effectively with stress is important. Exercise increases natural killer cell activity, which may also help prevent infections.

Nutritional supplements that may be helpful

Nutrients useful for maintaining healthy immune function are also applicable for preventing infections. Vitamin A plays an important role in immune system function and helps mucous membranes, including those in the lungs, resist invasion by microorganisms. However, most research shows that while vitamin A supplementation helps people prevent or treat infections in developing countries where deficiencies are common,[13] little to no positive effect, and even slight adverse effects, have resulted from giving vitamin A supplements to people in countries where most people consume adequate amounts of vitamin A. Moreover, vitamin A supplementation during infections appears beneficial only in certain diseases. An analysis of trials revealed that vitamin A reduces mortality from measles and diarrhoea, but not from pneumonia, in children living in developing countries. A double-blind trial for vitamin A supplementation in Tanzanian children with pneumonia confirmed its lack of effectiveness for this condition. In general, parents in the developed world should not give vitamin A supplements to children unless there is a reason to believe vitamin A deficiency is likely, such as the presence of a condition causing malabsorption (e.g., celiac disease). However, the American Academy of Pediatrics recommends that all children with measles should be given high-dose vitamin A for several days.

Vitamin C has antiviral activity, and may help prevent viral infections or, in the case of the common cold, reduce the severity and duration of an infection. Most studies on the common cold used 1 to 4 grams of vitamin C per day.

Lactobacillus acidophilus (the friendly bacteria found in yogurt) produces acids that kill invading bacteria. The effective amount of acidophilus depends on the strain used, as well as the concentration of viable organisms. These and other friendly bacteria known as probiotics inhibit the growth of potentially infectious organisms (pathogens) by producing acids, hydrogen peroxide, and natural antibiotics called bacteriocins and microcins, by utilizing nutrients needed by pathogens, by occupying attachment sites on the gut wall that would otherwise be available to pathogens, and by stimulating immune attacks on pathogens. Infections that have been successfully prevented or treated with friendly bacteria include infectious diarrhoea, vaginitis, and urinary tract infections.

Marginal deficiencies of zinc result in impairments of immune function. Supplementation with 50 mg of zinc three times per day for 30 days has been shown to increase immune function in healthy people. However, such large amounts of zinc can potentially cause adverse effects. Some doctors recommend lower amounts of supplemental zinc for people experiencing recurrent infections, such as 25 mg per day for adults and even lower amounts for children (depending on body weight). Zinc lozenges have been found helpful in some studies for the common cold. Zinc has not been studied as prevention or treatment for other types of infection.

A multiple vitamin-mineral formula helped elderly people avoid infections in one double-blind trial, but not in another. In a double-blind study of middle-aged and elderly diabetics, supplementation with a multiple vitamin and mineral preparation for one year reduced the risk of infection by more than 80%, compared with a placebo. In another double-blind trial, supplements of 100 mcg per day of selenium and 20 mg per day of zinc, with or without additional vitamin C, vitamin E, and beta-carotene, reduced infections in elderly people, though vitamins without minerals had no effect. That study suggests that trace minerals may be the most important components of a multiple vitamin and mineral formula for preventing infections.

Premature infants with very low birth weight have an increased susceptibility to infections. In a double-blind trial, premature infants were given either selenium supplements (5–7 mcg per 2.2 pounds of body weight) or placebo. Those receiving the selenium supplements had fewer hospital-acquired infections.

Athletes who undergo intensive training or participate in endurance races (such as a marathon) are at increased risk of developing infections. In a double-blind study, marathon runners received either glutamine (5 grams immediately after the race and 5 grams again two hours later) or a placebo. Compared with the placebo, supplementation with L-glutamine reduced the incidence of infections over the next seven days by 62%.

Herbs that may be helpful

The main herbs for infection can be broken down into three basic categories: those that support a person's immune system in the fight against microbes, those that directly attack microbes, and those that do both. These categories are summarized in the table below. Note that this table does not include herbs that are largely used for parasitic infections of the intestines.

Influenza

Influenza is the name of a virus and the infection it causes.

Although for most people the infection is mild, it can be severe and even deadly in those with compromised immune systems, including infants, the elderly, and people with diseases such as cancer and AIDS. In the past, huge epidemics of influenza have caused millions of deaths. Some nutritional and herbal recommendations for maintaining healthy immune function are also applicable for treating influenza.

What are the symptoms of influenza?

Symptoms of influenza include fever, muscle aches, fatigue, nausea, and vomiting. Other symptoms include headache, chills, dry cough, sore throat, pain when moving the eyes, sneezing, and runny nose. The onset of symptoms is often rapid and intense.

Nutritional supplements that may be helpful

Dockworkers given 100 mg of vitamin C each day for ten months caught influenza 28% less often than did their co-workers not taking vitamin C. Of those who did develop the flu, the average duration of illness was 10% less in those taking vitamin C than in those not taking the vitamin. Other trials have reported that taking vitamin C in high amounts (2 grams every hour for 12 hours) can lead to rapid improvement of influenza infections. Such high amounts, however, should only be used under the supervision of a healthcare professional.

Herbs that may be helpful

Echinacea has long been used for colds and flu. Double-blind trials in Germany have shown that infections associated with flu-like symptoms clear more rapidly when people take Echinacea. Echinacea appears to work by stimulating the immune system. The usual recommended amount of Echinacea is 3–5 ml of the expressed juice of the herb or tincture of the herb or root, or 300 mg of dried root powder three times per day.

The effect of a syrup made from the berries of the black elderberry on influenza has been studied in a small double-blind trial. People receiving an elderberry extract (four tablespoons per day for adults, two tablespoons per day for children) appeared to recover faster than did those receiving a placebo.

Asian ginseng and eleuthero (Siberian ginseng) have immune-enhancing properties, which may play a role in preventing infection with the influenza virus. However, they have not yet been specifically studied for this purpose. One double-blind trial found that co-administration of 100 mg of Asian ginseng extract with a flu vaccine led to a lower frequency of colds and flu compared to people who just received the flu vaccine alone.[13] Boneset has been shown in test tube and other studies to stimulate immune-cell function, which may explain it's traditional use to help fight off minor viral infections, such as the flu.

Wild indigo contains polysaccharides and proteins that have been reported in test tube studies to stimulate the immune system. The immune-enhancing effect of wild indigo is consistent with its use in traditional herbal medicine to fight the flu. However, wild indigo is generally used in combination with other herbs such as Echinacea, goldenseal, or thuja.

While not as potent as willow, which has a higher salicin content, the salicylates in meadowsweet do give it a mild anti-inflammatory effect and the potential to reduce fevers during a cold or flu. However, this role is based on historical use and knowledge of the chemistry of meadowsweet's constituents; to date, no human studies have been completed with meadowsweet.

Holistic approaches that may be helpful

Because family stress has been shown to increase the risk of influenza infection, measures to relieve stressful situations may be beneficial.

Insomnia

Insomnia refers to a prolonged inability to get adequate sleep. Not getting a good night's sleep can result from waking up in the middle of the night and having trouble getting back to sleep. It also occurs when people have a hard time falling asleep in the first place. Insomnia can be a temporary, occasional, or chronic problem.

What are the symptoms of insomnia?

Sleep-onset insomnia refers to the inability to fall asleep initially. Sleep-maintenance insomnia refers to the inability to stay asleep, with one or more awakenings during the night.

Dietary changes that may be helpful

Caffeine is a stimulant. The effects of caffeine can last up to 20 hours, so some people will have disturbed sleep patterns even when their last cup of coffee was in the morning. Besides regular coffee, black tea, green tea, cocoa, chocolate, some soft drinks, and many over-the-counter pharmaceuticals also contain caffeine.

Doctors will sometimes recommend eating a high-carbohydrate food before bedtime, such as a slice of bread or some crackers. Eating carbohydrates can significantly

increase levels of a neurotransmitter (chemical messenger) called serotonin, which is known to reduce anxiety and promote sleep.

Food allergy may also contribute to insomnia. In a trial involving eight infants, chronic insomnia was traced to an allergy to cow's milk. Avoidance of milk resulted in a normalization of sleep patterns.

Lifestyle changes that may be helpful

A steady sleeping and eating schedule combined with caffeine avoidance and counselling sessions using behavioural therapy has reduced insomnia for some people, as has listening to relaxation tapes.

The effect of exercise on sleep has not been well studied. However, some healthcare practitioners recommend daily exercise as a way to reduce stress, which in turn can help with insomnia.

A naturopathic therapy for insomnia is to take a 15- to 20-minute hot Epsom-salts bath before bedtime. One or two cups of Epsom salts (magnesium sulphate) in a hot bath are thought to act as a muscle relaxant.

Smokers are more likely to have insomnia than nonsmokers. As with many other health conditions, it is important for people with insomnia to quit smoking.

Nutritional supplements that may be helpful

Melatonin is a natural hormone that regulates the human biological clock. The body produces less melatonin with advancing age, which may explain why elderly people often have difficulty sleeping and why melatonin supplements improve sleep in the elderly.

Warning: Melatonin is a potent hormone and its long-term safety is not established. Melatonin should only be taken with medical supervision.

Middle-aged adults (average age, 54 years) with insomnia also have lower melatonin levels, compared with people of the same age without insomnia. However, there is not much research on the use of melatonin for sleep problems in middle-aged people.

Double-blind trials have shown that melatonin facilitates sleep in young adults without insomnia, but not in young people who suffer from insomnia. However, one trial found that children with sleep disturbances stemming from school phobia had improved sleep after taking 1 mg of melatonin per night for one week, then 5 mg per night for one week, then 10 mg per night for a third week.

The results of one double-blind trial also indicate that a controlled release melatonin supplement providing 2 mg per day improves sleep quality in people with schizophrenia. Normally, the body makes melatonin for several hours per night—an effect best duplicated with controlled-release supplements. Trials using timed-release melatonin for insomnia have reported good results. Many doctors suggest taking 0.5 to 3 mg of melatonin one and a half to two hours before bedtime. However, because melatonin is a potent hormone, the long-term effects of which are unknown, it should be taken only with the supervision of a doctor.

The amino acid, L-tryptophan, has been used successfully for people with insomnia, presumably because it is converted to the chemical messenger, serotonin. According to one preliminary trial, L-tryptophan supplementation was 100% effective at promoting sleep in people who awaken between three to six times per night, but not effective at all for people who only awaken once or twice, nor in people who doze on and off throughout the night in a state blurred between sleep and wakefulness. However, L-tryptophan is no longer available over the counter in the United States. A related compound that occurs naturally in the body, 5-Hydroxytryptophan (5-HTP), is also converted into serotonin and might, therefore, be helpful for insomnia. In a double-blind trial of people without insomnia, supplementation with 5-HTP (200 mg at 9:15 p.m. and 400 mg at 11:15 p.m.) increased rapid-eye-movement (REM) sleep, presumably indicating improved sleep quality.[17] In a preliminary trial of people with fibromyalgia, supplementing with 100 mg of 5-HTP three times a day improved sleep quality. However, additional research is needed to determine whether 5-HTP is safe and effective for people with insomnia.

Some people have difficulty sleeping because of a problem known as period limb movements during sleep (PLMS) or another condition called restless legs syndrome (RLS). In a preliminary trial, people with PLMS or RLS who suffered from insomnia had a significant improvement in sleep efficiency after supplementing with magnesium (about 300 mg each evening for four to six weeks).

In two small preliminary trials, people with insomnia resulting from disorders of the sleep-wake rhythm improved after supplementing with vitamin B12 (1,500 to 3,000 mcg per day).

Herbs that may be helpful

Herbal remedies have been used safely for centuries for insomnia. In modern herbal medicine, the leading herb for insomnia is valerian. Valerian root makes getting to sleep easier and increases deep sleep and dreaming. Valerian does not cause a morning "hangover," a side effect common to prescription sleep drugs in some people. A double-blind trial found that valerian extract (600 mg 30 minutes before bedtime for 28 days) is comparable in efficacy to oxazepam (Serax®), a commonly prescribed drug for insomnia. In a separate double-blind trial, the same amount of valerian extract was found to improve subjective assessments of sleep quality and certain aspects of brain function during sleep as well. A concentrated (4–5:1) valerian root supplement in the amount of 300–600 mg can be taken 30 minutes before bedtime. Alternately, 2 to 3 grams of the dried root in a capsule or 5 ml tincture can be taken 30 minutes before bedtime.

A combination of valerian and lemon balm has been tested for improving sleep. A small preliminary trial compared the effect of valerian root extract (320 mg at bedtime) and an extract of lemon balm (Melissa officinalis) with that of the sleeping drug triazolam (Halcion®). The effectiveness of the herbal combination was similar to that of Halcion, but only the Halcion group felt hung over and had trouble concentrating the next day. A double-blind trial found that a combination of valerian and lemon balm, taken over a two-week period, was effective in improving quality of sleep.

Another double-blind trial found a combination of 360 mg valerian and 240 mg lemon balm taken before bed improved reported sleep quality in one-third of the participants.[28] Combining valerian root with other mildly sedating herbs is common both in Europe and the United States. Chamomile, hops, passion flower, lemon balm, American Scullcap,

and catnip are commonly recommended by doctors. These herbs can also be used alone as mild sedatives for those suffering from insomnia or nervous exhaustion. Chamomile is a particularly good choice for younger children whose insomnia may be related to gastrointestinal upset. Hops and lemon balm are approved by the German government for relieving sleep disturbances.

Bitter orange has a history of use as a calming agent and to counteract insomnia. There is no clinical trial data to support its efficacy in this regard. The usual amount of tincture used is 2 to 3 ml at bedtime.

Corydalis contains several ingredients, one of which has been shown to influence the nervous system, providing pain relief and promoting relaxation. People with insomnia were able to fall sleep more easily after taking 100–200 mg per day of a corydalis extract (called dl-tetrahydropalmatine, or DHP), according to a preliminary report. People taking the extract reported no drug hangover symptoms, such as dizziness or vertigo.

The volatile oil of lavender contains many medicinal components, including perillyl alcohol, linalool, and geraniol. The aroma of the oil is known to be calming and thus may be helpful in some cases of insomnia. One trial of elderly people with sleeping troubles found that inhaling lavender oil was as effective as tranquilizers. Teas made from lavender flowers or from the oil (1–4 drops) are approved for internal use by the German Commission E for people with insomnia. Internal use of essential oils can be dangerous and should be done only with the supervision of a trained herbalist or healthcare professional.

Holistic approaches that may be helpful

Insomnia can be triggered by psychological stress. Dealing with stress, through counselling or other techniques, may be the key to a better night's rest. Many trials have shown that psychological intervention can be helpful for insomnia. A combined program of counselling, sleep restriction methods (i.e., the only time spent in bed is when sleeping), and control of stimuli that might interfere with sleep, significantly increased sleep time in a group of people with insomnia.

Acupuncture may be helpful for insomnia, possibly by increasing production of calming neurotransmitters such as serotonin and other substances. A preliminary trial found one acupuncture treatment daily for seven to ten days resulted in complete recovery of normal sleep in 59% of patients and partial recovery in 21%. A controlled trial treated patients with either acupuncture or fake acupuncture (insertion of needles at non-acupuncture points). The patients receiving true acupuncture had significant improvements in a laboratory measure of sleep quality compared to the placebo group. The treatment of insomnia with auricular (ear) acupuncture may provide similar benefits to people with insomnia, according to a preliminary trial. However, double-blind trials are necessary to conclusively determine the value of acupuncture in treating insomnia.

Iron-Deficiency Anaemia

Anaemia is a reduction in the number of red blood cells (RBCs); in the amount of hemoglobin in the blood (hemoglobin is the iron-containing pigment of the red blood cells that carry oxygen from the lungs to the tissues); and in another related index called hematocrit (the volume of RBCs after they have been spun in a centrifuge). All three values are measured on a complete blood count, also referred to as a CBC. Iron-

deficiency anaemia can be distinguished from most other forms of anaemia by the fact that it causes RBCs to be abnormally small and pale, an observation easily appreciated by viewing a blood sample through a microscope.

Iron deficiency also can occur, even if someone is not anaemic. Symptoms of iron deficiency without anaemia may include fatigue, mood changes, and decreased cognitive function. Blood tests (such as serum ferritin, which measures the body's iron stores) are available to detect iron deficiency, with or without anaemia.

Iron deficiency, whether it is severe enough to lead to anaemia or not, can have many non-nutritional causes (such as excessive menstrual bleeding, bleeding ulcers, haemorrhoids, gastrointestinal bleeding caused by aspirin or related drugs, frequent blood donations, or colon cancer) or can be caused by a lack of dietary iron. Menstrual bleeding is probably the leading cause of iron deficiency. However, despite common beliefs to the contrary, only about one premenopausal woman in ten is iron deficient. Deficiency of vitamin B12, folic acid, vitamin B6, or copper can cause other forms of anaemia, and there are many other causes of anaemia that are unrelated to nutrition. This article will only cover iron-deficiency anaemia.

What are the symptoms of iron-deficiency anaemia?

Some common symptoms of anaemia include fatigue, lethargy, weakness, poor concentration, and impaired immune function. In iron-deficiency, fatigue also occurs because iron is needed to make optimal amounts of ATP—the energy source the body runs on. This fatigue usually begins long before a person is anaemic. Said another way, a lack of anaemia does not rule out iron deficiency in tired people. Another symptom of anaemia, called pica, is the desire to eat unusual things, such as ice, clay, cardboard, paint, or starch. Advanced anaemia may also result in light-headedness, headaches, ringing in the ears (tinnitus), irritability, pale skin, unpleasant sensations in the legs with an uncontrollable urge to move them (restless legs syndrome), and getting winded easily.

Dietary changes that may be helpful

Iron deficiency is not usually caused by a lack of dietary iron alone. Nonetheless, a lack of iron in the diet is often part of the problem, so ensuring an adequate supply of iron is important for people with a documented deficiency. The most absorbable form of iron, called "heme" iron, is found in meat, poultry, and fish. Non-heme iron is also found in these foods, as well as in dried fruit, molasses, leafy green vegetables, wine, and most iron supplements. Acidic foods (such as tomato sauce) cooked in an iron pan can leech iron into the food and thus also be a source of dietary iron.

Vegetarians eat less iron than non-vegetarians, and the iron they eat is somewhat less absorbable. As a result, vegetarians are more likely to have reduced iron stores. Vegetarians can increase their iron intake by emphasizing iron-containing foods within their diet (see above), or in some cases by supplementing iron, if needed.

Coffee interferes with the absorption of iron. However, moderate intake of coffee (4 cups per day) may not adversely affect risk of iron-deficiency anaemia when the diet contains adequate amounts of iron and vitamin C. Black tea contains tannins that strongly inhibit the absorption of non-heme iron. In fact, this iron-blocking effect is so effective that drinking black tea can help treat hemochromatosis, a disease of iron overload. Consequently, people who are iron deficient should avoid drinking tea.

Fibre is another dietary component that can reduce the absorption of iron from foods. Foods high in bran fibre can reduce the absorption of iron from foods consumed at the same meal by half. Therefore, it makes sense for people needing to take iron supplements to avoid doing so at mealtime if the meal contains significant amounts of fibre.

Nutritional supplements that may be helpful

Before iron deficiency can be treated, it must be diagnosed and the cause must be found by a doctor. In addition to addressing the cause (e.g., avoiding aspirin, treating a bleeding ulcer, etc.), supplementation with iron is the primary way to resolve iron-deficiency anaemia.

If a doctor diagnoses iron deficiency, iron supplementation is essential. Though some doctors use higher amounts, a common daily dose for adults is 100 mg per day. Even though symptoms of deficiency should disappear much sooner, iron deficient people usually need to keep supplementing with iron for six months to one year until the ferritin test is completely normal. Even after taking enough iron to overcome the deficiency, some people with recurrent iron deficiency—particularly some premenopausal women—need to continue to supplement with smaller levels of iron, such as the 18 mg present in most multivitamin-mineral supplements. This need for continual iron supplementation even after deficiency has been overcome should be determined by a doctor.

Liver extracts from beef are a rich natural source of many vitamins and minerals, including iron. Bovine liver extracts provide the most absorbable form of iron—heme iron—as well as other nutrients critical in building blood, including vitamin B12 and folic acid. Liver extracts can contain as much as 3–4 mg of heme iron per gram.

Taking vitamin A and iron together has been reported to help overcome iron deficiency more effectively than iron supplements alone.[7] Although the optimal amount of vitamin A needed to help people with iron deficiency has yet to be established, some doctors recommend 10,000 IU per day.

Vitamin C increases the absorption of non-heme iron. Some doctors advise iron-deficient people to take vitamin C (typically 100–500 mg) at the same time as their iron supplement.

Hydrochloric acid produced by the stomach improves the absorption of non-heme iron from food and supplements. Some practitioners recommend a hydrochloric acid supplement (e.g., betaine hydrochloride [betaine HCl]), to enhance iron absorption in people with iron-deficiency anaemia.

A high degree of association between iron-deficiency anaemia and vitamin D deficiency in Asian children has been previously reported. In three different ethnic groups living in England, iron-deficiency anaemia was found to be a significant risk factor for low vitamin D levels in children. These findings suggest that children with iron-deficiency anaemia should be screened for vitamin D deficiency and be given vitamin D supplements if necessary.

Taurine has been shown, in a double-blind study, to improve the response to iron therapy in young women with iron-deficiency anaemia. The amount of taurine used was

1,000 mg per day for 20 weeks, given in addition to iron therapy, but at a different time of the day. The mechanism by which taurine improves iron utilization is not known.

Caution: People who are not diagnosed with iron deficiency should not supplement with iron, because taking iron when it isn't needed has no benefit and may do some harm. Adult iron supplements are the most common cause of fatal poisonings in children. Keep all iron supplements out of the reach of children.

Jet Lag

Jet lag is a disturbance of the sleep-wake cycle triggered by travel across time zones

What are the symptoms of jet lag?

Jet lag causes a combination of symptoms, including daytime sleepiness, disorientation, poor concentration, fatigue, gastrointestinal discomfort, headaches, difficulty falling asleep, and frequent waking from sleep. The symptoms can last from a day to a week or longer, depending on the person and the number of time zones crossed.

Nutritional supplements that may be helpful

Melatonin is a natural hormone that regulates the human biological clock and may be helpful in relieving symptoms of jet lag, according to some, though not all, double-blind studies. One double-blind trial, involving international flight crew members, found that melatonin supplementation was helpful when started after arriving at the destination but not when started three days before leaving. Another double-blind study compared various amounts and forms of melatonin taken at bedtime for four days after the flight by people who travelled through six to eight time zones. Fast-release melatonin supplements were found to be more effective than the controlled-release supplements. A 5 mg and 0.5 mg fast-release melatonin were almost equally effective for improving sleep quality, time it took to fall asleep, and daytime sleepiness.

Kidney Stones

Kidney stones are hard masses that can grow from crystals forming within the kidneys. Doctors call kidney stones "renal calculi," and the condition of having such stones "nephrolithiasis."

Most kidney stones are made of calcium oxalate. People with a history of kidney stone formation should talk with their doctor to learn what type of stones they have—approximately one stone in three is made of something other than calcium oxalate and one in five contains little if any calcium in any form. Calcium oxalate stone formation is rare in primitive societies, suggesting that this condition is preventable. People who have formed a calcium oxalate stone are at high risk of forming another kidney stone.

Caution: The information included in this article pertains to prevention of calcium oxalate kidney stone recurrence only—not to other kidney stones or to the treatment of acute disease. The term "kidney stone" will refer only to calcium oxalate stones. However, information regarding how natural substances affect urinary levels of calcium may also be important for people with a history of calcium phosphate stones.

What are the symptoms of kidney stones?

Kidney stones often cause severe back or flank pain, which may radiate down to the groin region. Sometimes kidney stones are accompanied by gastrointestinal symptoms, chills, fever, and blood in urine.

Dietary changes that may be helpful

Increasing dietary oxalate can lead to an increase in urinary oxalate excretion. Increased urinary oxalate increases the risk of stone formation. As a result, most doctors agree that kidney stone formers should reduce their intake of oxalate from food as a way to reduce urinary oxalate. Many foods contain oxalate; however, only a few—spinach, rhubarb, beet greens, nuts, chocolate, tea, bran, almonds, peanuts, and strawberries—appear to significantly increase urinary oxalate levels.

Increased levels of urinary calcium also increases the risk of stone formation. Consumption of animal protein from meat, dairy, poultry, or fish increases urinary calcium. Perhaps for this reason, consumption of animal protein has been linked to an increased risk of forming stones and vegetarians have been reported to be at lower risk for stone formation in some reports. As a result, many researchers and some doctors believe that people with a history of kidney stone formation should restrict intake of animal foods high in protein.

In one controlled trial, contrary to expectations, after 4.5 years of follow-up, those who restricted their dietary protein actually had an increased risk of forming a kidney stone, compared with the control group. The findings of this trial conflict with the outcomes of most preliminary studies, and need to be confirmed by further clinical trials. Other researchers have found that a low-protein diet reduces the risk of forming stones. Although high-protein diets should probably be avoided by people with kidney stones, the effect of restricting dietary protein to low levels (below the RDA level of 0.8 grams per 2.2 pounds of body weight per day) remains unclear. Until more is known, it makes sense to consume a diet with a moderate amount of protein, perhaps partially limiting animal protein, but not limiting protein from vegetarian sources, such as nuts and beans.
Salt increases urinary calcium excretion in stone formers. In theory, this should increase the risk of forming a stone. As a result, some researchers have suggested that reducing dietary salt may be a useful way to decrease the chance of forming additional stones. Increasing dietary salt has also affected a variety of other risk factors in ways that suggest an increased chance of kidney stone formation. Some doctors recommend that people with a history of kidney stones reduce salt intake. To what extent such a dietary change would reduce the risk of stone recurrence remains unclear.

Potassium reduces urinary calcium excretion, and people who eat high amounts of dietary potassium appear to be at low risk of forming kidney stones. Most kidney stone research involving potassium supplementation uses the form potassium citrate. When a group of stone formers was given 5 grams of potassium citrate three times daily in addition to their regular drug treatment for 28 months, they had a significantly lower rate of stone recurrence compared to those taking potassium for only eight months and to those taking no potassium at all.[24] Although citrate itself may lower the risk of stone recurrence (see below), in some potassium research, a significant decrease in urinary calcium occurs even in the absence of added citrate. This finding suggests that increasing potassium itself may reduce the risk of kidney stone recurrence. The best way to increase potassium is to eat fruits and vegetables. The level of potassium in food is much higher than the small amounts found in supplements.

Some citrate research conducted with people who have a history of kidney stones involves supplementation with a combination of potassium citrate and magnesium citrate. In one double-blind trial, the recurrence rate of kidney stones dropped from 64% to 13% for those receiving high amounts of both supplements. In that trial, people were instructed to take six pills per day—enough potassium citrate to provide 1,600 mg of potassium and enough magnesium citrate to provide 500 mg of magnesium. Both placebo and citrate groups were also advised to restrict salt, sugar, animal protein, and foods rich in oxalate. Other trials have also shown that potassium and magnesium citrate supplementation reduces kidney stone recurrences.

Citric acid (citrate) is found in many foods and may also protect against kidney stone formation. The best food source commonly available is citrus fruits, particularly lemons. One preliminary trial found that drinking 2 litres (approximately 2 quarts) of lemonade per day improved the quality of the urine in ways that are associated with kidney stone prevention. Lemonade was far more effective in modifying these urinary parameters than orange juice. The lemonade was made by mixing 4 oz lemon juice with enough water to make 2 litres. The smallest amount of sweetener possible should be added to make the taste acceptable. Further study is necessary to determine if lemonade can prevent recurrence of kidney stones.

Drinking grapefruit juice has been linked to an increased risk of kidney stones in two large studies. Whether grapefruit juice actually causes kidney stone recurrence or is merely associated with something else that increases risks remains unclear; some doctors suggest that people with a history of stones should restrict grapefruit juice intake until more is known.

Bran, a rich source of insoluble fibre, reduces the absorption of calcium, which in turn causes urinary calcium to fall. In one trial, risk of forming kidney stones was significantly reduced simply by adding one-half ounce of rice bran per day to the diet. Oat and wheat bran are also good sources of insoluble fibre and are available in natural food stores and supermarkets. Before supplementing with bran, however, people should check with a doctor, because some people—even a few with kidney stones—don't absorb enough calcium. For those people, supplementing with bran might deprive them of much-needed calcium.

People who form kidney stones have been reported to process sugar abnormally. Sugar has also been reported to increase urinary oxalate, and in some reports, urinary calcium as well. As a result, some doctors recommend that people who form stones avoid sugar. To what extent, if any, such a dietary change decreased the risk of stone recurrence has not been studied and remains unclear.

Drinking water increases the volume of urine. In the process, substances that form kidney stones are diluted, reducing the risk of kidney stone recurrence. For this reason, people with a history of kidney stones should drink at least two quarts per day. It is particularly important that people in hot climates increase their fluid intake to reduce their risk.

Drinking coffee or other caffeine-containing beverages increases urinary calcium. Long-term caffeine consumers are reported to have an increased risk of osteoporosis, suggesting that the increase in urinary calcium caused by caffeine consumption may be

significant. However, coffee consists mostly of water, and increasing water consumption is known to reduce the risk of forming a kidney stone. While many doctors are concerned about the possible negative effects of caffeine consumption in people with a history of kidney stones, preliminary studies in both men and women have found that coffee and tea consumption is actually associated with a reduced risk of forming a kidney stone. These reports suggest that the helpful effect of consuming more water by drinking coffee or tea may compensate for the theoretically harmful effect that caffeine has in elevating urinary calcium. Therefore, the bulk of current research suggests that it is not important for kidney stone formers to avoid coffee and tea.

The findings of some but not all studies suggest that consumption of soft drinks may increase the risk of forming a kidney stone. The phosphoric acid found in these beverages is thought to affect calcium metabolism in ways that might increase kidney stone recurrence risk.

Nutritional supplements that may be helpful

IP-6 (inositol hexaphosphate, also called phytic acid) reduces urinary calcium levels and may reduce the risk of forming a kidney stone. In one trial, 120 mg per day of IP-6 for 15 days significantly reduced the formation of calcium oxalate crystals in the urine of people with a history of kidney stone formation.

In the past, doctors have sometimes recommended that people with a history of kidney stones restrict calcium intake because a higher calcium intake increases the amount of calcium in urine. However, calcium (from supplements or food) binds to oxalate in the gut before either can be absorbed, thus interfering with the absorption of oxalate. When oxalate is not absorbed, it cannot be excreted in urine. The resulting decrease in urinary oxalate actually reduces the risk of stone formation, and the reduction in urinary oxalate appears to outweigh the increase in urinary calcium. In clinical studies, people who consumed more calcium in the diet were reported to have a lower risk of forming kidney stones than people who consume less calcium.

However, while dietary calcium has been linked to reduction in the risk of forming stones, calcium supplements have been associated with an increased risk in a large study of American nurses. The researchers who conducted this trial speculate that the difference in effects between dietary and supplemental calcium resulted from differences in timing of calcium consumption. Dietary calcium is eaten with food, and so it can then block absorption of oxalates that may be present at the same meal. In the study of American nurses, however, most supplemental calcium was consumed apart from food. Calcium taken without food will increase urinary calcium, thus increasing the risk of forming stones; but calcium taken without food cannot reduce the absorption of oxalate from food consumed at a different time. For this reason, these researchers speculate that calcium supplements were linked to increased risk because they were taken between meals. Thus, calcium supplements may be beneficial for many stone formers, as dietary calcium appears to be, but only if taken with meals.

When doctors recommend calcium supplements to stone formers, they often suggest 800 mg per day in the form of calcium citrate or calcium citrate malate, taken with meals. Citrate helps reduce the risk of forming a stone (see “Dietary changes that may be helpful” above). Calcium citrate has been shown to increase urinary citrate in stone formers, which may act as protection against an increase in urinary calcium resulting from absorption of calcium from the supplement.

Despite the fact that calcium supplementation taken with meals may be helpful for some, people with a history of kidney stone formation should not take calcium supplements without the supervision of a healthcare professional. Although the increase in urinary calcium caused by calcium supplements can be mild or even temporary, some stone formers show a potentially dangerous increase in urinary calcium following calcium supplementation; this may, in turn, increase the risk of stone formation. People who are "hyperabsorbers" of calcium should not take supplemental calcium until more is known. Using a protocol established years ago in the Journal of Urology, 24-hour urinary calcium studies conducted both with and without calcium supplementation determine which stone formers are calcium "hyperabsorbers." Any healthcare practitioner can order this simple test.

Increased blood levels of vitamin D are found in some kidney stone formers, according to some, but not all, research. Until more is known, kidney stone formers should take vitamin D supplements only after consulting a doctor.

Both magnesium and vitamin B6 are used by the body to convert oxalate into other substances. Vitamin B6 deficiency leads to an increase in kidney stones as a result of elevated urinary oxalate. Vitamin B6 is also known to reduce elevated urinary oxalate in some stone formers who are not necessarily B6 deficient.

Years ago, the Merck Manual recommended 100–200 mg of vitamin B6 and 200 mg of magnesium per day for some kidney stone formers with elevated urinary oxalate. Most trials have shown that supplementing with magnesium and/or vitamin B6 significantly lowers the risk of forming kidney stones. Results have varied from only a slight reduction in recurrences[75] to a greater than 90% decrease in recurrences.

Optimal supplemental levels of vitamin B6 and magnesium for people with kidney stones remain unknown. Some doctors advise 200–400 mg per day of magnesium. While the effective intake of vitamin B6 appears to be as low as 10–50 mg per day, certain people with elevated urinary oxalate may require much higher amounts, and therefore require medical supervision. In some cases, as much as 1,000 mg of vitamin B6 per day (a potentially toxic level) has been used successfully.

Doctors who do advocate use of magnesium for people with a history of stone formation generally suggest the use of magnesium citrate because citrate itself reduces kidney stone recurrences. As with calcium supplementation, it appears important to take magnesium with meals in order for it to reduce kidney stone risks by lowering urinary oxalate.

It has been suggested that people who form kidney stones should avoid vitamin C supplements, because vitamin C can convert into oxalate and increase urinary oxalate. Initially, these concerns were questioned because the vitamin C was converted to oxalate after urine had left the body. However, newer trials have shown that as little as 1 gram of vitamin C per day can increase urinary oxalate levels in some people, even those without a history of kidney stones. In one case report, a young man who ingested 8 grams per day of vitamin C had a dramatic increase in urinary oxalate excretion, resulting in calcium-oxalate crystal formation and blood in the urine. On the other hand, in preliminary studies performed on large populations, high intake of vitamin C was associated with no change in the risk of forming a kidney stone in women, and with a

reduced risk in men. This research suggests that routine restriction of vitamin C to prevent stone formation is unwarranted. However, until more is known, people with a history of kidney stones should consult a doctor before taking large amounts (1 gram or more per day) of supplemental vitamin C.

Chondroitin sulphate may play a role in reducing the risk of kidney stone formation. One trial found 60 mg per day of glycosamionoglycans significantly lowered urinary oxalate levels in stone formers. Chondroitin sulphate is a type of glycosaminoglycan. A decrease in urinary oxalate levels should reduce the risk of stone formation.

In a double-blind trial, supplementation with 200 IU of synthetic vitamin E per day was found to reduce several risk factors for kidney stone formation in people with elevated levels of urinary oxalate.

Herbs that may be helpful

Two trials from Thailand reported that eating pumpkin seeds reduces urinary risk factors for forming kidney stones. One of those trials, which studied the effects of pumpkin seeds on indicators of the risk of stone formation in children, used 60 mg per 2.2 pounds of body weight—the equivalent of only a fraction of an ounce per day for an adult. The active constituents of pumpkin seeds responsible for this action have not been identified.

Lactose Intolerance

Lactose intolerance is the impaired ability to digest lactose (the naturally occurring sugar in milk). The enzyme lactase is needed to digest lactose, and a few children and many adults do not produce sufficient lactase to digest the milk sugar. The condition is rare in infants.

Only one-third of the population worldwide retains the ability to digest lactose into adulthood. Most adults of Asian, African, Middle Eastern, and Native American descent are lactose intolerant. In addition, half of Hispanics and about 20% of Caucasians do not produce sufficient lactase as adults.

A simple test for lactose intolerance is to drink at least two 8-ounce glasses of milk on an empty stomach and note any gastrointestinal symptoms that develop in the next four hours. The test should then be repeated using several ounces of cheese (which does not contain much lactose). If symptoms result from milk but not cheese, then the person probably has lactose intolerance. If symptoms occur with both milk and cheese, the person may be allergic to dairy products (very rarely can lactose intolerance be so severe that even eating cheese will cause symptoms). In addition to gastrointestinal problems, one study has reported a correlation in women between lactose intolerance and a higher risk of depression and PMS. However, this study is only preliminary and does not establish a cause-and-effect relationship.

What are the symptoms of lactose intolerance?

In people with lactose intolerance, consuming foods containing lactose results in intestinal cramps, gas, and diarrhoea.

Dietary changes that may be helpful

Although symptoms of lactose intolerance are triggered by the lactose in some dairy products, few lactose-intolerant people need to avoid all dairy. Dairy products have varying levels of lactose, which affects how much lactase is required for proper digestion. Milk, ice cream, and yogurt contain significant amounts of lactose—although for complex reasons yogurt often does not trigger symptoms in lactose-intolerant people. In addition, lactose-reduced milk is available in some supermarkets and may be used by lactose-intolerant people.

Many people with lactose maldigestion tolerate more lactose in experimental studies than in everyday life, in which their symptoms may result from other carbohydrates as well. Sucrose and the indigestible carbohydrates lactulose and fructooligosaccharides (FOS) have all been shown to produce symptoms in lactose-intolerant and milk-intolerant people.

Nutritional supplements that may be helpful

Supplemental sources of the enzyme lactase may be used to prevent symptoms of lactose intolerance when consuming lactose-containing dairy products. Lactase drops may be added to regular milk 24 hours before drinking to reduce lactose levels. Lactase drops, capsules, and tablets may also be taken orally, as needed, immediately before a meal that includes lactose-containing dairy products. The degree of lactose intolerance varies by individual, so a greater or lesser amount of oral lactase may be needed to eliminate symptoms of lactose intolerance.

Researchers have yet to clearly determine whether lactose-intolerant people absorb less calcium. As lactose-containing foods are among the best dietary sources of calcium, alternative sources of calcium (from food or supplements) are important for lactose-intolerant people. A typical amount of supplemental calcium is 1,000 mg per day.

Lactobacillus acidophilus supplements do not appear to be effective in reducing the signs and symptoms of lactose intolerance. In a preliminary trial, people with lactose intolerance were given Lactobacillus acidophilus supplements twice daily for seven days, but failed to show any improvement in symptoms or laboratory measurements of lactose digestion.

Low Back Pain

The low back supports most of the body's weight, and as a result, is susceptible to pain caused by injury or other problems. Over 80% of adults experience low back pain (LBP) sometime during their life. More than half will have a repeat episode.

It is often difficult to pinpoint the root of low back pain, though poor muscle tone, joint problems, and torn muscles or ligaments are common causes. A herniated or slipped disc may also cause low back pain as well as sciatica, a condition where pain travels down one or both buttocks and/or legs.

Standing or sitting for extended periods, wearing high heels, and being sedentary increase the risk of developing low back pain, as do obesity and back strain due to improper lifting. Up to half of pregnant women experience some low back pain. Long hours spent driving a car may contribute to a herniated disc. This is possibly due to the vibration caused by the car.

Many people with low back pain recover without seeing a doctor or receiving treatment. Up to 90% recuperate within three to four weeks, though recurrences are common, and chronic low back pain develops in many people. Low back pain is considered acute, or short-term, when it lasts for a few days up to many weeks. Chronic low back pain refers to any episode that lasts longer than three months.

While low back pain is rarely life threatening, it is still important to have chronic or recurring back pain assessed by a healthcare professional. Potentially serious causes include spinal tumour, infection, fracture, nerve damage, osteoporosis, arthritis, or pain caused by conditions found in internal organs such as the kidneys.

What are the symptoms of low back pain?

Low back pain may be a steady ache or a sharp, acute pain that is worse with movement.

Lifestyle changes that may be helpful

Preliminary data indicate that smoking may contribute to low back pain. One survey of over 29,000 people reported a significant association between smoking and low back pain. Smaller people (children, women, those who weigh less) are most affected. A study involving people with herniated discs found that both current and ex-smokers are at much higher risk of developing disc disease than non-smokers. Other research reveals 18% greater disc degeneration in the lower spines of smokers compared with nonsmokers. Smoking is thought to cause malnutrition of spinal discs, which in turn makes them more vulnerable to mechanical stress.

One survey reported that people who drank wine healed more quickly after disc surgery in the lower back than those who abstained. However, alcohol consumption may cause cirrhosis of the liver, cancer, high blood pressure, and alcoholism. As a result, many doctors never recommend alcohol even though moderate consumption has been linked to some health benefits. For those deciding whether light drinking might help with recovery from disc surgery, it is best to consult a doctor.

Regular exercise and proper lifting techniques help prevent low back problems from developing. Proper lifting involves keeping an object close to the body and avoiding bending forwarding, reaching, and twisting while lifting. Low back pain and disc degeneration are both more likely to develop among sedentary people than those who are physically active. However, long-term participation in some competitive sports may contribute to spinal disc degeneration.

Therapeutic exercise helps people recover from low back pain and low back surgery. Less clear are details about how this should be done for greatest benefit. In other words, the best type of exercise, frequency, duration, and timing of a program still need to be determined. One study reported therapeutic exercise significantly improved chronic low back pain compared to exercise performed at home without professional guidance. Another trial discovered that women with chronic low back pain who began supervised back strengthening exercises at a fitness centre were more consistent exercisers than those who started and continued therapeutic exercises at home. Both groups experienced significant improvement in pain. However, the supervised group experienced better long-term improvement.

While heavy lifting and other strenuous labour may contribute to low back pain, one trial found that people with sedentary jobs gained more benefit from an exercise program than those who have physically hard or moderate occupations. Motivational programs may also improve exercise consistency, which in turn decreases pain and disability. People with low back pain who wish to embark on an exercise program should first consult with a physical therapist or other practitioner skilled in this area.

Supervised bed rest, for two to four days, coupled with appropriate physical therapy and therapeutic exercise, is often recommended by medical doctors for acute low back pain. However, reviews of bed rest recommendations have concluded that bed rest is, at best, ineffective and may even delay recovery. It is better to try to stay active and maintain a normal daily schedule as much as possible.

General recommendations for people recuperating from low back pain include wearing low-heeled comfortable shoes, sitting in chairs with good lower back support, using work surfaces that are a comfortable height, resting one foot on a low stool if standing for long periods, and supporting the low back during long periods of driving.

Nutritional supplements that may be helpful

Three double-blind trials have investigated the effects of supplementing a combination of the enzymes trypsin and chymotrypsin for seven to ten days on severe low back pain with or without accompanying leg pain. Eight tablets per day were given initially in all trials, but in two trials the number of pills was reduced to four per day after two to three days. One of these trials reported small, though statistically significant improvements, for some measures in people with degenerative arthritis of the lower spine. People with sciatica-type leg pain had significant improvement in several measures in one trial, while another found the enzymes were not much more effective than a placebo. These trials included chronic low back conditions, so their relevance to acute LBP alone may be limited.

Several animal studies and some research involving humans suggest that a synthetic version of the natural amino acid phenylalanine called D-phenylalaline (DPA), reduces pain by decreasing the enzyme that breaks down endorphins. It is less clear whether DPA may help people with LBP, though there are a small number of reports to that effect, including one uncontrolled report of 27 of 37 people with LBP experiencing “good to excellent relief.” In a double-blind trial, University of Texas researchers found that 250 mg of DPA four times per day for four weeks was no more effective than placebo for 30 people with various types of chronic pain; 13 of these people had low back pain. In a Japanese clinical trial, 4 grams of DPA per day was given to people with chronic low back pain half an hour before they received acupuncture. Although not statistically significant, the results were good or excellent for 18 of the 30. The most common supplemental form of phenylalanine is D,L-phenylalanine (DLPA). Doctors typically recommend 1,500–2,500 mg per day of DLPA.

A combination of vitamin B1, vitamin B6, and vitamin B12 has proved useful for preventing a relapse of a common type of back pain linked to vertebral syndromes, as well as reducing the amount of anti-inflammatory medications needed to control back pain, according to double-blind trials. Typical amounts used have been 50–100 mg each of vitamins B1 and B6, and 250–500 mcg of vitamin B12, all taken three times per day. Such high amounts of vitamin B6 require supervision by a doctor.

Proteolytic enzymes, including bromelain, papain, trypsin, and chymotrypsin, may be helpful in healing minor injuries because they have anti-inflammatory activity and are capable of being absorbed from the gastrointestinal tract. Several preliminary trials have reported reduced pain and swelling, and/or faster healing in people with a variety of conditions who use either bromelain or papain.

A preliminary report in 1964 suggested that 500–1,000 mg per day of vitamin C helped many people avoid surgery for their disc-related low back pain. No controlled research has been done to examine this claim further.

Herbs that may be helpful

Colchicine, a substance derived from autumn crocus, may be helpful for chronic back pain caused by a herniated disc. A review shows that colchicine has provided relief from pain, muscle spasm, and weakness associated with disc disease including several double-blind trials. The author of these reports has suggested that 0.6 to 1.2 mg of colchicine per day leads to dramatic improvement in four out of ten cases of disc disease. In most clinical trials, colchicine is given intravenously. However, the oral administration of this herb-based remedy also has had moderate effectiveness. People with low back pain should consult a physician skilled in herbal medicines before taking colchicine due to potentially severe side effects.

Willow bark is traditionally used for pain and conditions of inflammation. According to one controlled clinical trial, use of high amounts of willow bark extract may help people with low back pain. One trial found 240 mg of salicin from a willow extract to be more effective than 120 mg of salicin or a placebo for treating exacerbations of low back pain.
Topical cayenne pepper has been used for centuries to reduce pain, and more recently, to diminish localized pain for a number of conditions, including chronic pain, although low back pain has not been specifically investigated. Cayenne creams typically contain 0.025–0.075% capsaicin. While cayenne cream causes a burning sensation the first few times used, this decreases with each application. Pain relief is also enhanced with use as substance P, the compound that induces pain, is depleted. To avoid contamination of the mouth, nose, or eyes, hands should be thoroughly washed after use or gloves should be worn. Do not apply cayenne cream to broken skin.

One double-blind trial found that devil's claw capsules (containing 800 mg of a concentrated extract taken three times per day) were helpful in reducing acute low back pain in some people. Another double-blind trial (using 200 mg or 400 mg of devil's claw extract three times daily) achieved similar results in some people with exacerbations of chronic low back pain.

Herbalists often use ginger to decrease inflammation and the pain associated with it, including for those with low back pain. They typically suggest 1.5 to 3 ml of ginger tincture three times per day, or 2 to 4 grams of the dried root powder two to three times per day. Some products contain a combination of curcumin and ginger. However, no research has investigated the effects of these herbs on low back pain.

A combination of eucalyptus and peppermint oil applied directly to a painful area may help. Preliminary research indicates that the counter-irritant quality of these essential oils may decrease pain and increase blood flow to afflicted regions. Peppermint and eucalyptus, diluted in an oil base, are usually applied several times per day, or as

needed, to control pain. Plant oils that may have similar properties are rosemary, juniper, and wintergreen.

Turmeric is another herb known traditionally for its anti-inflammatory effects, a possible advantage for people suffering from low back pain. Several preliminary studies confirm that curcumin, one active ingredient in turmeric, may decrease inflammation in both humans and animals. In one double-blind trial, a formula containing turmeric, other herbs, and zinc significantly diminished pain for people with osteoarthritis. Standardized extracts containing 400 to 600 mg of curcumin per tablet or capsule are typically taken three times per day. For tinctures of turmeric, 0.5 to 1.5 ml three times per day are the usual amount.

Holistic approaches that may be helpful

Acupuncture may be helpful in the treatment of low back pain in some people. Case reports and numerous preliminary trials have described significant improvement in both acute and chronic back pain following acupuncture (or acupuncture with electrical stimulation) treatment. In a single controlled study of acute back pain, both electroacupuncture and drug therapy (acetaminophen) led to statistically significant pain reduction and improved mobility.

Several controlled clinical trials have evaluated acupuncture for chronic low back pain. A controlled trial found acupuncture was significantly superior to placebo (fake electrical stimulation through the skin) in four of five measures of pain and physical signs. Controlled trials using electroacupuncture have reported either benefit or no benefit for chronic back pain. A double-blind trial compared acupuncture to injections of anaesthetic just below the skin at non-acupuncture points, and found no difference in effect between the two treatments.[79] Controlled trials have compared acupuncture to transcutaneous nerve stimulation (TENS). Some, though not all, demonstrated greater pain relief with acupuncture when compared to TENS, and one found improved spinal mobility only with acupuncture.

In one preliminary trial, acupuncture relieved pain and diminished disability in the low back during pregnancy better than physiotherapy.

A recent analysis and review of studies reported acupuncture was effective for low back pain,[85] though another recent review concluded acupuncture could not be recommended due to the poor quality of the research. A third review concluded that acupuncture was beneficial for people with slipped discs and sciatica and could be recommended at the very least as a supplementary therapy. Since the vast majority of controlled acupuncture research addresses chronic low back pain, it remains unknown whether people with acute low back pain benefit significantly from acupuncture.

The federally funded Agency for Health Care Policy and Research has deemed spinal manipulation effective for acute low back pain during the first month following injury. This recommendation is supported by other research, though some has not been well controlled. People whose initial pain or disability is severe to moderate appear to benefit the most, though those with longer lasting or chronic pain may also be helped by spinal manipulation. One 12-month controlled study found no difference in benefit between manipulation and standard physical therapy. Another controlled study found a series of eight treatments with spinal manipulation was as effective as conventional medical therapy, but the manipulation group needed less pain medication and physical therapy.

Practitioners who perform spinal manipulation include chiropractors, some osteopaths, and some physical therapists.

Some researchers suggest that spinal manipulation should not be performed on people with a herniated (slipped) disc, because it may lead to spinal cord injuries. However, other preliminary trials report that spinal manipulation helps those with herniated discs, as did one controlled study comparing manipulation to standard physical therapy. In one investigation of 59 people with slipped discs who received chiropractic treatment, including manipulation, 90% reported improvement. Those with a history of low back surgery had poor outcomes. People with LBP due to herniated discs who wish to try this method should first consult with a chiropractor or other physician skilled in spinal manipulation. A recent controlled study compared manipulation, acupuncture, and medication for chronic spinal pain. Only manipulation significantly improved pain and disability scores.

There is inconclusive evidence that massage alone helps people with low back pain, though preliminary research indicates it has potential. Many practitioners use massage in combination with other physical therapies, such as spinal manipulation or therapeutic exercise. People with low back pain who want to try massage should consult with a qualified massage therapist.

Some controlled trials indicate that biofeedback benefits people with chronic low back pain, but other trials do not. One study found that biofeedback was more effective than behavioural therapy or conservative medical treatment for people with chronic back pain. The study also found biofeedback to be the only method where people experienced significant reduction in pain for up to the two years of follow-up. People wishing to try biofeedback should discuss this method with a qualified practitioner.

Emotional distress has been associated with aggravating low back pain, including that caused by a herniated disc. The effects on back pain of counselling aimed at reducing emotional stress remain unknown, though it is used in some clinics employing multidisciplinary approaches to treating chronic lower back pain.

Measles

Measles is a potentially serious, highly contagious infection caused by the measles virus. Infection is easily transmitted by kissing or being coughed or sneezed upon by an infected person. The recent introduction of an effective vaccine against measles has greatly reduced the number of cases in many countries, though some developing nations continue to experience serious measles epidemics in children.

What are the symptoms of measles?

Symptoms of measles begin with a runny nose, cough, muscle aches, fatigue, and a slight fever, often accompanied by redness of the eyes and sensitivity to light. Later, the fever rises and a mildly itchy red rash develops on the face and spreads to the lower body. In severe cases, there may be high fever, convulsions, pneumonia, or severe diarrhoea, and some severe cases can result in death.

Lifestyle changes that may be helpful

Treatment of measles is aimed at minimizing discomfort as the symptoms develop. Since people with measles tend to run a high fever, reducing the temperature with a

lukewarm bath can reduce aches and other discomforts. Adding mineral salts or oatmeal to the bath water may reduce the itchiness of the skin. Because of their sensitivity to light, being in a room with dimmed lights will be soothing to the person with measles.

Nutritional supplements that may be helpful

Measles appears to increase the body's need for vitamin A. Studies in developing countries have shown that measles infection is more frequent and severe in people with low vitamin A blood levels, and preliminary research suggests this may also be true in the developed world. Repeatedly in controlled trials, preventive supplementation with vitamin A, at oral doses of up to 400,000 IU per day, reduced the risk of death in children with measles living in developing countries. Whether vitamin A supplementation would help people with measles in developed countries, where deficiency is uncommon, is less clear. However, the American Academy of Pediatrics recommends that all children with measles be given a short course of high-dose vitamin A. Two controlled studies of urban South African and Japanese children hospitalized with severe measles showed that supplementation with 100,000 to 400,000 IU of vitamin A resulted in faster recoveries, fewer complications, and fewer pneumonia-related deaths. An older study in England found one ounce per day of cod liver oil (containing about 40,000 IU of vitamin A, plus vitamin D and omega-3 fatty acids) reduced measles-related deaths in children hospitalized with severe cases of the disease. Such large doses of vitamin A should only be taken under a doctor's supervision.

Flavonoids are nutrients found in the white, pithy parts of fruits and vegetables. In preliminary laboratory research, certain flavonoids have been found to inhibit the infectivity of measles virus in the test tube. Whether flavonoid supplements could be effective in preventing or treating measles is unknown.

Menopause

Menopause is the cessation of the monthly female menstrual cycle. Women who have not had a menstrual period for a year are considered postmenopausal.

Most commonly, menopause takes place when a woman is in her late forties or early fifties. Women who have gone through menopause are no longer fertile. Menopause is not a disease and cannot be prevented. Many hormonal changes occur during menopause. Postmenopausal women are at higher risk of heart disease and osteoporosis, presumably because of a decrease in the production of oestrogen or other hormones.

What are the symptoms of menopause?

Several unpleasant symptoms may accompany menopause. Some, such as vaginal dryness, result from the lack of oestrogen. Others, such as hot flashes and decreased sex drive, are caused by more complex hormonal changes. Some women experience depression, anxiety, or insomnia during menopause.

Dietary changes that may be helpful

Soybeans contain compounds called phytoestrogens that are related in structure to oestrogen, though some reports show soy's estrogenic activity to be quite weak. Soy is known to affect the menstrual cycle in premenopausal women. Societies with high consumption of soy products have a low incidence of hot flashes during menopause.

In one double-blind trial, supplementation with 60 grams of soy protein caused a 33% decrease in the number of hot flashes after four weeks and a 45% reduction after 12 weeks. However, in further analysis of the data in this trial, researchers credit constituents in soybeans other than phytoestrogens for the therapeutic effect. In one controlled clinical trial, high intake of phytoestrogens from soy and flaxseed reduced both hot flashes and vaginal dryness; however, much (though not all) of the benefit was also seen in the control group.[6] In another double-blind study, 100 mg per day of isoflavones extracted from soy was effective in relieving hot flashes.

As a result of these studies, doctors often recommend that women experiencing menopausal symptoms eat tofu, soy milk, tempeh, roasted soy nuts, and other soy-based sources of phytoestrogens. Soy sauce contains very little phytoestrogen content, and many processed foods made from soybean concentrates have insignificant levels of phytoestrogens. Supplements containing isoflavones extracted from soy are commercially available, and flaxseed (as opposed to flaxseed oil) is also a good source of phytoestrogens.

Lifestyle changes that may be helpful

Sedentary women are more likely to have moderate or severe hot flashes compared with women who exercise. In one trial, menopausal symptoms were reduced immediately after aerobic exercise.

Cigarette smoking may be related to hot flashes in menopausal women. Preliminary data have shown that women who experience hot flashes are more likely to be smokers. Another preliminary study found that new users of hormone replacement therapy for the relief of menopausal symptoms were more likely to be current cigarette smokers than were those who had never smoked.

Nutritional supplements that may be helpful

Many years ago, researchers studied the effects of vitamin E supplementation in reducing symptoms of menopause. Most, but not all, studies found vitamin E to be helpful. Many doctors suggest that women going through menopause take 800 IU per day of vitamin E for a trial period of at least three months to see if symptoms are reduced. If helpful, this amount may be continued. Using lower amounts for less time has led to statistically significant changes, but only marginal clinical improvement.

In 1964, a preliminary trial reported that 1,200 mg each of vitamin C and the flavonoid hesperidin taken over the course of the day helped relieve hot flashes. Although placebo effects are strong in women with hot flashes, other treatments used in that trial failed to act as effectively as the flavonoid/vitamin C combination. Since then, researchers have not explored the effects of flavonoids or vitamin C in women with menopausal symptoms.

The mineral boron is known to affect oestrogen metabolism. In one double-blind trial using 2.5 mg of boron per day for two months, hot flashes and night sweats worsened in 21 of 43 women, but the same symptoms improved in ten others. Women who are experiencing hot flashes or night sweats that have been diagnosed as menopausal symptoms and who are also supplementing boron (sometimes found in significant amounts in osteoporosis formulas and multivitamin-mineral supplements) should consider discontinuing use of boron-containing supplements to see if the severity of their symptoms is reduced.

Aging in women is characterized by a progressive decline in blood DHEA (dehydroepiandrosterone) and DHEA-sulphate (DHEAS) levels. These levels can be restored with DHEA supplementation. This process also improves the response of some brain chemicals, called endorphins, to certain drugs. These endorphins are involved in sensations of pleasure and pain; improving their response may explain why DHEA has an effect on mood symptoms associated with menopause. In one double-blind trial, however, menopausal women who took 50 mg of DHEA per day for three months had no improvement in symptoms compared with women taking placebo. Further study is needed to validate a role for DHEA in the management of menopausal symptoms.

Natural progesterone supplementation has been anecdotally linked to reduction in symptoms of menopause. In one trial, natural progesterone was found to have no independent effect on symptoms, and synthetic progestins were found to increase breast tenderness. However, a double-blind trial found that topical administration of natural progesterone cream led to a reduction in hot flashes in 83% of women, compared with improvement in only 19% of those given placebo. Preliminary research has found that oral, micronized progesterone therapy is associated with improved quality of life among postmenopausal women. However, oral micronized progesterone is available only by prescription in the United States. Hot flashes, anxiety, depression, sleep problems, and sexual functioning were among the symptoms improved in a majority of women surveyed. Synthetic progestins, also available only by prescription, have reduced symptoms of menopause.

Progesterone is a hormone and, as such, concerns about its inappropriate use (i.e., as an over-the-counter supplement) have been raised. The amount of progesterone in commercially available creams varies widely, and the progesterone content is not listed on the label because the creams are legally regulated as cosmetics, not dietary supplements. Therefore, a physician should be consulted before using these hormone-containing creams as supplements. Although few side effects have been associated with topical progesterone creams, skin reactions may occur in some users. Effects of natural progesterone on breast cancer risk remain unclear; research has suggested both increased and reduced risk.

Herbs that may be helpful

Double-blind trials support the usefulness of black cohosh for women with hot flashes associated with menopause. A review of eight trials concluded black cohosh to be both safe and effective.[34] Many doctors recommend 20 mg of a highly concentrated extract taken twice per day; 2–4 ml of tincture three times per day may also be used.

A variety of herbs with weak oestrogen-like actions similar to the effects of soy have traditionally been used for women with menopausal symptoms. These herbs include liquorice, alfalfa, and red clover. In a double-blind trial, a formula containing tinctures of liquorice, burdock, dong quai, wild yam, and motherwort (30 drops three times daily) was found to reduce symptoms of menopause. No effects on hormone levels were detected in this study. In a separate double-blind trial, supplementation with dong quai (4.5 grams three times daily in capsules) had no effect on menopausal symptoms or hormone levels. A double-blind trial using a standardized extract of subterranean clover (Trifolium subterraneum), a relative of red clover, containing 40 mg isoflavones per tablet did not impact symptoms of menopause, such as hot flashes, though it did improve function of the arteries. An extract of red clover, providing 82 mg of isoflavones per day, also was

ineffective in a 12-week double-blind study. In another double-blind study, however, administration of 80 mg of isoflavones per day from red clover reduced the frequency of hot flashes in postmenopausal women. The benefit was noticeable after 4 weeks of treatment and became more pronounced after a total of 12 weeks.

Sage may reduce excessive perspiration due to menopausal hot flashes during the day or at night. It is believed this is because sage directly decreases production of sweat. This is based on traditional herbal prescribing and has not been evaluated in clinical studies

Blue vervain (Verbene hastata) is a traditional herb for menopause; however, there is no research to validate this use. Tincture has been recommended at an amount of 5–10 ml three times per day.

Preliminary evidence suggests that supplementation with St. John's Wort extract (300 mg three times daily for 12 weeks) may improve psychological symptoms, including sexual well-being, in menopausal women.

A double-blind trial found that Asian ginseng (200 mg per day of standardized extract) helped alleviate psychological symptoms of menopause, such as depression and anxiety, but did not decrease physical symptoms, such as hot flashes or sexual dysfunction, in postmenopausal women who had not been treated with hormones.
Warning: Kava should only be taken with medical supervision. Kava is not for sale in certain parts of the world.

In a double-blind trial, a standardized kava extract was found to be effective at reducing anxiety and other symptoms associated with menopause. The study used 100 mg of kava extract standardized to contain 70% kava-lactones, three times per day. Most commercially available kava extracts contain up to 35% kava-lactones. In another study, administration of kava enhanced the anti-anxiety effect of hormone replacement therapy in postmenopausal women.

Holistic approaches that may be helpful

Acupuncture may be helpful in the treatment of menopausal symptoms. Animal research suggests that acupuncture may help normalize some biochemical changes that are associated with menopausal disturbances of memory, mood, and other functions. One preliminary trial in humans demonstrated a significant reduction (more than 50%) in hot flashes in menopausal women receiving either electroacupuncture (acupuncture with electrical stimulation) or superficial acupuncture (shallow needle insertion). Other preliminary trials support these results and suggest additional menopausal symptoms may also respond to acupuncture. However, no placebo-controlled trials have been done to conclusively prove the effectiveness of acupuncture for menopausal symptoms.

Minor Injuries

Minor injuries include such injuries as bruises, sprains, strains, and skin wounds.
The healing of minor injuries requires the involvement of several body systems, including the circulatory system, the immune system, and the cellular mechanisms to repair and grow new tissues.

For more information about specific minor injuries, please refer to the following articles:

- ☑ Bruising
- ☑ Burns
- ☑ Low back pain
- ☑ Pain
- ☑ Sprains and strains

Morning Sickness

Morning sickness is the common but poorly understood nausea that frequently accompanies early pregnancy.

It is generally not serious, although it can be quite unpleasant. Hyperemesis gravidarum is uncontrollable nausea and vomiting during pregnancy that results in severe dehydration and pH imbalances in the blood. It is distinct from morning sickness with nausea and vomiting. The former condition requires treatment by a healthcare professional and, sometimes, hospitalization. Hyperemesis gravidarum can sometimes result from hyperthyroidism, liver disease, kidney infection, pancreatitis, intestinal obstruction, or other causes—conditions that will not respond to any of the natural substances discussed in this article.

What are the symptoms of morning sickness?

Symptoms include nausea, vomiting, fatigue, light-headedness, and dizziness during the early stages of pregnancy. Women with morning sickness may be particularly sensitive to certain odours and foods. However, eating small amounts of a particular food may relieve their symptoms.

Dietary changes that may be helpful

Some doctors recommend that women with morning sickness eat dry crackers upon waking. Drinking liquids and eating solid foods at separate times may be helpful as well.
In a Harvard University study, women with a high intake of saturated fat (found mainly in meat and dairy) during the year prior to pregnancy had a much higher risk of severe morning sickness than did women eating less saturated fat. An increase in saturated fat intake of 15 grams per day (the equivalent of a four-ounce cheeseburger or three cups of whole milk) was associated with a greater than threefold increase in the risk of developing morning sickness.

Nutritional supplements that may be helpful

In two double-blind trials, supplementation with vitamin B6 (10 or 25 mg three times per day) significantly reduced the severity of morning sickness.

Vitamin K and vitamin C, taken together, may provide relief of symptoms for some women. In one study, 91% of women who took 5 mg of vitamin K and 25 mg of vitamin C per day reported the complete disappearance of morning sickness within three days. However, most doctors use higher amounts of vitamin C (500 to 1,000 mg per day).

In a preliminary study done in the 1930s, eight women suffering from nausea and vomiting during the first trimester (13 weeks) of pregnancy received large amounts of oral adrenal cortex extract. In most cases, vomiting stopped after three to four days. In a follow-up study, women with nausea and vomiting of pregnancy received adrenal cortex

extract, usually by injection at first, followed by oral administration. More than 85% of the women were completely relieved of the problem or showed definite improvement.[7] Since no safety data exist for use during pregnancy, adrenal extract should not be used in these situations unless supervised by a doctor.

Herbs that may be helpful

Ginger is well-known for alleviating nausea and improving digestion. One gram of encapsulated ginger powder was used in one study to reduce the severe nausea and vomiting associated with hyperemesis gravidarum. This condition is potentially life-threatening and should only be treated by a qualified healthcare professional.
Because ginger contains some compounds that cause chromosomal mutation in the test tube, some doctors are concerned about the safety of using ginger during pregnancy. However, the available clinical research, combined with the fact that ginger is widely used in the diets of many cultures, suggests that prudent use of ginger for morning sickness is probably safe in amounts up to 1 gram per day.

Holistic approaches that may be helpful

A controlled trial found that acupuncture significantly reduced symptoms in women with hyperemesis gravidarum, a severe form of nausea and vomiting of pregnancy that usually requires hospitalization. Treatment consisted of acupuncture at a single point on the forearm three times daily for two consecutive days. Acupressure (in which pressure, rather than needles, is used to stimulate acupuncture points) has also been found in several preliminary trials to be mildly effective in the treatment of nausea and vomiting of pregnancy.

Motion Sickness

Motion sickness is nausea, vomiting, and related symptoms caused by repetitive angular and linear acceleration and deceleration.

What are the symptoms of motion sickness?

Motion sickness is characterized by cycles of nausea and vomiting. These episodes may be preceded by yawning, salivation, pallor, cold sweat, and sleepiness. Dizziness, headache, fatigue, and general discomfort are also common. Once nausea and vomiting develop, a person with motion sickness is typically weak and unable to concentrate.

Herbs that may be helpful

Ginger may be useful for the prevention and treatment of mild to moderate cases of motion sickness. A double-blind trial examined the effects of ginger supplements in people who were susceptible to motion sickness. Researchers found that those taking 940 mg of powdered ginger in capsules experienced less motion sickness than those who took dimenhydrinate (Dramamine®). Another double-blind trial reported that 1 gram of powdered ginger root, compared with placebo, lessened seasickness by 38% and vomiting by 72% in a group of naval cadets sailing in heavy seas. Two clinical trials, one with adults and one with children, found that ginger was as effective in treating seasickness as dimenhydrinate but with fewer side effects. In one controlled trial, though, neither powdered ginger (500 to 1,000 mg) nor fresh ginger (1,000 mg) provided any protection against motion sickness. Doctors prescribing ginger for motion sickness recommend 500 mg one hour before travel and then 500 mg every two to four hours as necessary. The study with children used one-half the adult amount.

Ginger's beneficial effect on motion sickness appears to be related to its action on the gastrointestinal tract rather than on the central nervous system.

Black horehound(Ballotta nigra, Marrubium nigrum) is sometimes used by herbalists to treat nausea associated with motion sickness. However, there are no clinical trials to confirm its effectiveness for treating this condition.

Night Blindness

People with night blindness (also called impaired dark adaptation) see poorly in the darkness but see normally when adequate amounts of light are present. The condition does not actually involve true blindness, even at night.

What are the symptoms of night blindness?

Symptoms include difficulty seeing when driving in the evening or at night, poor vision in reduced light, and feeling that the eyes take longer to "adjust" to seeing in the dark.

Nutritional supplements that may be helpful

Night blindness may be an early sign of vitamin A deficiency. Such a deficiency may result from diets low in animal foods (the main source of vitamin A), such as eggs, dairy products, organ meats, and some fish. Low intake of fruits and vegetables containing beta-carotene, which the body converts into vitamin A, may also contribute to a vitamin A deficiency. Doctors often recommend 10,000 to 25,000 IU of vitamin A per day to correct a deficiency. Beta-carotene is less effective at correcting vitamin A deficiency than is vitamin A itself, because it is not absorbed as well and is only slowly converted by the body into vitamin A.

Dietary zinc deficiency is common, and a lack of zinc may reduce the activity of retinol dehydrogenase, an enzyme needed to help vitamin A work in the eye. Zinc helps night blindness in people who are zinc-deficient; therefore, many physicians suggest 15 to 30 mg of zinc per day to support healthy vision. Because long-term zinc supplementation may reduce copper levels, 1 to 2 mg of copper per day (depending on the amount of zinc used) is usually recommended for people who are supplementing with zinc for more than a few weeks.

Herbs that may be helpful

Bilberry, a close relative of the blueberry, is high in flavonoids known as anthocyanosides. Anthocyanosides speed the regeneration of rhodopsin, the purple pigment that is used by the rods in the eye for night vision. Supplementation with bilberry has been shown in early studies to improve dark adaptation in people with poor night vision. However, two newer studies found no effect of bilberry on night vision in healthy people. Bilberry extract standardized to contain 25% anthocyanosides may be taken in capsule or tablet form. Doctors typically recommend 240 to 480 mg per day.

Osteoarthritis

Osteoarthritis (OA) is a chronic disease of the joints, especially the weight-bearing joints that develops when the linings of joints degenerate, leading to lipping and spurring of bone, pain, and decreased mobility and function.

OA is a universal consequence of aging among animals with a bony skeleton. Many factors contribute to the development of OA; the disease is primarily associated with aging and injury and was once called “wear-and-tear” arthritis. OA may occur secondary to many other conditions. However, in most cases, the true cause of OA is unknown.

What are the symptoms of osteoarthritis?

The onset of OA is gradual and most often affects the hips, knees, fingers, and spine, although other joints also may be involved. Pain is the main symptom, which usually worsens with exercise and is relieved by rest. Morning stiffness is also common and diminishes with movement. As OA progresses, joint motion is lost, and tenderness and grating sensations may develop. OA of the spine may lead to shooting pains down the arms or legs.

Dietary changes that may be helpful

In the 1950s through the 1970s, Dr. Max Warmbrand used a diet free of meat, poultry, dairy, chemicals, sugar, eggs, and processed foods for people with rheumatoid arthritis and OA, anecdotally claiming significant success. He reported that clinical results took at least six months to develop. The Warmbrand diet has never been properly tested in clinical research. Moreover, although the diet is healthful and might reduce the risk of being diagnosed with many other diseases, it is difficult for most people to follow. This difficulty, plus the lack of published research, leads many doctors who are aware of the Warmbrand diet to use it only if other approaches have failed.

Solanine is a substance found in nightshade plants, including tomatoes, white potatoes, all peppers (except black pepper), and eggplant. In theory, if not destroyed in the intestine, solanine may be toxic. One horticulturist hypothesized that some people might not be able to destroy solanine in the gut, leading to solanine absorption and resulting in OA. This theory has not been proven. However, eliminating solanine from the diet has been reported to bring relief to some arthritis sufferers in preliminary research. In a survey of people avoiding nightshade plants, 28% claimed to have a “marked positive response” and another 44% a “positive response.” Researchers have never put this diet to a strict clinical test; however, the treatment continues to be used by some doctors with patients who have OA. As with the Warmbrand diet, proponents claim exclusion of solanine requires up to six months before potential effects may be seen. Totally eliminating tomatoes and peppers requires complex dietary changes for most people. In addition, even proponents of the diet acknowledge that many arthritis sufferers are not helped by using this approach. Therefore, long-term trial avoidance of solanine-containing foods may be appropriate only for people with OA who have not responded to other natural treatments.

Most of the studies linking allergies to joint disease have focused on rheumatoid arthritis, although mention of what was called “rheumatism” in older reports (some of which may have been OA) suggests a possible link between food reactions and aggravations of OA symptoms. If other therapies are unsuccessful in relieving symptoms, people with OA might choose to discuss food allergy identification and elimination with a physician.

Lifestyle changes that may be helpful

Obesity increases the risk of OA developing in weight-bearing joints, and weight loss in women is associated with reduced risk for developing OA. Weight loss is also thought to reduce the pain of existing OA.

Nutritional supplements that may be helpful

Glucosamine sulphate (GS), a nutrient derived from seashells, is a building block needed for the synthesis and repair of joint cartilage. GS supplementation has significantly reduced symptoms of OA in uncontrolled and single-blind trials. Many double-blind trials have also reported efficacy. Only one published trial has reported no effect of GS on OA symptoms. While most research trials use 500 mg GS taken three times per day, results of a three-year, double-blind trial indicate that 1,500 mg taken once per day produces significant reduction of symptoms and halts degenerative changes seen by X-ray examination. GS does not cure people with osteoarthritis, and they may need to take the supplement for the rest of their lives in order to maintain benefits. Fortunately, GS appears to be virtually free of side effects, even after three or more years of supplementation. Benefits from GS generally become evident after three to eight weeks of treatment.

Only one trial has evaluated another form of glucosamine as a single remedy for OA. This trial found only minor benefits from 1,500 mg per day of glucosamine hydrochloride (GH) for eight weeks in people with osteoarthritis of the knee; these people were also taking up to 4,000 mg per day of acetaminophen for pain relief. To more fairly evaluate the effects of GH, future research should exclude people taking pain-relieving medication. Another form of glucosamine sometimes found in combination formulas, N-acetyl-glucosamine (NAG), has not been studied in people with osteoarthritis.

Chondroitin sulphate (CS) is a major component of the lining of joints. The structure of CS includes molecules related to glucosamine sulphate. CS levels have been reported to be reduced in joint cartilage affected by OA. Possibly as a result, CS supplementation may help restore joint function in people with OA. On the basis of preliminary evidence, researchers had believed that oral CS was not absorbed in humans; as a result, early double-blind CS research was done mostly by giving injections. This research documented clinical benefits from CS injections. It now appears, however, that a significant amount of CS is absorbable in humans, though dissolving CS in water leads to better absorption than swallowing whole pills.

Strong clinical evidence now supports the use of oral CS supplements for OA. Many double-blind trials have shown that CS supplementation consistently reduces pain, increases joint mobility, and/or shows evidence (including X-ray changes) of healing within joints of people with OA. Most trials have used 400 mg of CS taken two to three times per day. One trial found that taking the full daily amount (1,200 mg) at one time was as effective as taking 400 mg three times per day. Reduction in symptoms typically occurs within several months.

S-adenosyl methionine (SAMe) possesses anti-inflammatory, pain-relieving, and tissue-healing properties that may help protect the health of joints, though the primary way in which SAMe reduces OA symptoms is not known. A very large, though uncontrolled, trial (meaning that there was no comparison with placebo) demonstrated “very good” or “good” clinical effect of SAMe in 71% of over 20,000 OA sufferers. In addition to this

preliminary research, many double-blind trials have shown that SAMe reduces pain, stiffness, and swelling better than placebo and equal to drugs such as ibuprofen and naproxen in people with OA. These double-blind trials all used 1,200 mg of SAMe per day.

Lower amounts of oral SAMe have also produced reductions in the severity of OA symptoms in preliminary clinical trials. A two-year, uncontrolled trial showed significant improvement of symptoms after two weeks at 600 mg SAMe daily, followed by 400 mg daily thereafter. This amount was also used in a double-blind trial, but participants first received five days of intravenous SAMe. A review of the clinical trials on SAMe concluded that its efficacy against OA was similar to that of conventional drugs but that patients tolerated it better.

People who have OA and eat large amounts of antioxidants in food have been reported to exhibit a much slower rate of joint deterioration, particularly in the knees, compared with people eating foods containing lower amounts of antioxidants. Of the individual antioxidants, only vitamin E has been studied as a supplement in controlled trials. Vitamin E supplementation has reduced symptoms of OA in both single-blind and double-blind research. In these trials, 400 to 1,600 IU of vitamin E per day was used. Clinical effects were obtained within several weeks. However, in a six-month double-blind study of patients with osteoarthritis of the knee, 500 IU per day of vitamin E was no more effective than a placebo.

In the 1940s and 1950s, one doctor reported that supplemental niacinamide (a form of vitamin B3) increased joint mobility, improved muscle strength, and decreased fatigue in people with OA. In the 1990s, a double-blind trial confirmed a reduction in symptoms from niacinamide within 12 weeks of beginning supplementation. Although amounts used have varied from trial to trial, many doctors recommend 250 to 500 mg of niacinamide four or more times per day (with the higher amounts reserved for people with more advanced arthritis). The mechanism by which niacinamide reduces symptoms is not known.

The effects of New Zealand green-lipped mussel supplements have been studied in people with OA. In a preliminary trial, either a lipid extract (210 mg per day) or a freeze-dried powder (1,150 mg per day) of green-lipped mussel reduced joint tenderness and morning stiffness, as well as improving overall function in most participants. In a double-blind trial, 45% of people with OA who took a green-lipped mussel extract (350 mg three times per day for three months) reportedly had improvements in pain and stiffness. Another double-blind trial reported excellent results from green-lipped mussel extract (2,100 mg per day for six months) for pain associated with arthritis of the knee. Side effects, such as stomach upset, gout, skin rashes, and one case of hepatitis have been reported in people taking certain New Zealand green-lipped mussel extracts.

The therapeutic use of DMSO (dimethyl sulfoxide) is controversial because of safety concerns, but some preliminary research shows that diluted preparations of DMSO, applied directly to the skin, are anti-inflammatory and alleviate pain, including pain associated with OA. A recent double-blind trial found that a 25% concentration of DMSO in gel form relieved osteoarthritis pain significantly better than a placebo after three weeks. DMSO appears to reduce pain by inhibiting the transmission of pain messages by nerves[67] rather than through a process of healing damaged joints. DMSO comes in different strengths and different degrees of purity; in addition, certain precautions must

be taken when applying DMSO. For these reasons, DMSO should be used only with the supervision of a doctor.

According to a small double-blind trial, 2,250 mg per day of oral methylsulfonylmethane (MSM), a variant of DMSO, reduced OA pain after six weeks.

Cetyl myristoleate (CMO) has been proposed to act as a joint "lubricant" and anti-inflammatory agent. In a double-blind trial, people with various types of arthritis who had failed to respond to non-steroidal anti-inflammatory drugs (NSAIDs) received CMO (540 mg per day orally for 30 days), while others received a placebo. These people also applied CMO or placebo topically, according to their perceived need. A statistically significant 63.5% of those using CMO improved, compared with only 14.5% of those using placebo.

Boron affects calcium metabolism, and a link between boron deficiency and arthritis has been suggested. Although people with OA have been reported to have lower stores of boron in their bones than people without the disease, other minerals also are deficient in the bones of people with OA. One double-blind trial found that 6 mg of boron per day, taken for two months, relieved symptoms of OA in five of ten people, compared with improvement in only one of the ten people assigned to placebo. This promising finding needs confirmation from larger trials.

The omega-3 fatty acids present in fish oil, EPA and DHA, have anti-inflammatory effects and have been studied primarily for rheumatoid arthritis, which involves significant inflammation. However, OA also includes some inflammation. In a 24-week controlled but preliminary trial studying people with OA, people taking EPA had "strikingly lower" pain scores than people who took placebo. However, in a double-blind trial by the same research group, supplementation with 10 ml of cod liver oil per day was no more effective than a placebo.

Supplementation with D-phenylalanine (DPA), a synthetic variation of the amino acid, L-phenylalanine (LPA), has reduced chronic pain due to OA in a preliminary trial. In that study, participants took 250 mg three to four times per day, with pain relief beginning in four to five weeks. Other preliminary trials have confirmed the effect of DPA in chronic pain control, but a double-blind trial found no benefit. DPA inhibits the enzyme that breaks down some of the body's natural painkillers, substances called enkephalins, which are similar to endorphins. An increase in the amount of enkephalins may explain the reported pain-relieving effect of DPA. If DPA is not available, a related product, D,L-phenylalanine (DLPA), may be substituted (1,500 to 2,000 mg per day). Phenylalanine should be taken between meals, because protein found in food may compete for uptake of phenylalanine into the brain, potentially reducing its effect.

Several trials have suggested that people with OA may benefit from supplementation with bovine cartilage, which contains a mixture of protein and molecules related to chondroitin sulphate. In one preliminary trial, use of injected and topical bovine cartilage led to symptom relief in most people studied. A ten-year study confirmed improvement with long-term use of bovine cartilage. Optimal intake of bovine cartilage is not known.

Osteoporosis

Osteoporosis is a condition in which the normal amount of bone mass has decreased. People with osteoporosis have brittle bones, which increases the risk of bone fracture, particularly in the hip, spine, and wrist. Osteoporosis is most common in postmenopausal Asian and Caucasian women. Premenopausal women are partially protected against bone loss by the hormone called oestrogen. Black women often have slightly greater bone mass than do other women, which helps protect against bone fractures. In men, testosterone partially protects against bone loss even after middle age. Beyond issues of race, age, and gender, incidence varies widely from society to society, suggesting that osteoporosis is largely preventable.

What are the symptoms of osteoporosis?

Osteoporosis is a silent disease that may not be noticed until a broken bone occurs. Signs may include diminished height, rounded shoulders, dowager's hump, and evidence of bone loss from diagnostic tests. Symptoms may include neck or back pain.

Dietary changes that may be helpful

Studies attempting to uncover the effects of high animal protein intake on the risk of osteoporosis have produced confusing and contradictory results. The same is true of studies attempting to find out whether vegetarians are protected against osteoporosis. Moreover, while some studies report that protein supplementation lowers death rates and shortens hospital stays or reduces bone loss among people with osteoporosis, others have found that such supplementation is of little value.

These conflicting findings may occur in part because dietary protein produces opposing effects on bone. On one hand, dietary protein increases the loss of calcium in urine, which should increase the risk of osteoporosis. On the other hand, normal bone formation requires adequate dietary protein, and low dietary protein intake has been associated with low bone mineral density. Current research shows that finding the line between too much protein and too little protein remains elusive, though extremes in protein intake—either high or low—might possibly increase the risk of osteoporosis.

Short-term increases in dietary salt result in increased urinary calcium loss, which suggests that over time, salt intake may cause bone loss. Increasing dietary salt has increased markers of bone loss in postmenopausal (though not premenopausal) women. Although a definitive link between salt intake and osteoporosis has not yet been proven, many doctors recommend that people wishing to protect themselves against bone loss use less salt and eat fewer processed and restaurant foods, which tend to be highly salted.

Like salt, caffeine increases urinary loss of calcium. Caffeine intake has been linked to increased risk of hip fractures and to a lower bone mass in women who consumed inadequate calcium. Many doctors recommend decreasing caffeinated coffee, black tea, and caffeine-containing soft drinks as a way to improve bone mass.

Curiously, while caffeine-containing tea consumption has been linked to osteoporosis in some studies, others have reported that tea drinkers have a lower risk of osteoporosis than do people who do not drink tea. Possibly, the calcium-losing effect of caffeine in tea is overridden by other constituents of tea, such as flavonoids.

People who consume soft drinks have been reported to have an increased incidence of bone fractures, although short-term consumption of carbonated beverages has not affected markers of bone health. The problem, if one exists, may be linked to phosphoric acid, a substance found in many soft drinks. In one trial, children consuming at least six glasses (1.5 litres) of soft drinks containing phosphoric acid had more than five times the risk of developing low blood levels of calcium compared with other children. Although a few studies have not linked soft drinks to bone loss, the preponderance of evidence now suggests that a problem may exist.

Soy foods, such as tofu, soy milk, roasted soy beans, and soy protein powders, may be beneficial in preventing osteoporosis. Isoflavones from soy have protected against bone loss in animal studies. In a double-blind trial, postmenopausal women who supplemented with 40 grams of soy protein powder (containing 90 mg of isoflavones) per day were protected against bone mineral loss in the spine, although lower amounts were not protective. In a double-blind study, administration of the soy isoflavone genistein (54 mg per day) to postmenopausal women for one year reduced bone breakdown, increased bone formation, and increased bone mineral density of the hip and spine. The effect on bone density was similar to that of conventional hormone-replacement therapy.
The effect of dairy products on the risk of osteoporosis-related fractures is subject to controversy. According to a review of 46 studies, different dairy products appear to have different effects on bone density and fracture rates. Milk, especially non-fat milk, probably does more good than harm because of its relatively lower protein and salt content, as well as its higher level of calcium. Cottage cheese and American cheese, on the other hand, probably do more harm than good. Cottage cheese is high in protein and salt but low in calcium, factors which could contribute to bone loss. American cheese is extremely high in salt and high in protein. These foods are not recommended as calcium sources for the prevention of osteoporotic fractures. Although there may be better ways of getting calcium, younger women who wish to prevent osteoporosis might consider non-fat milk and non-fat yogurt to be reasonable dietary calcium sources.

Lifestyle changes that may be helpful

Smoking leads to increased bone loss. For this and many other health reasons, smoking should be avoided.

Exercise is known to help protect against bone loss. The more weight-bearing exercise done by men and postmenopausal women, the greater their bone mass and the lower their risk of osteoporosis. Walking is a perfect weight-bearing exercise. For premenopausal women, exercise is also important, but taken to extreme, it may lead to cessation of the menstrual cycle, which contributes to osteoporosis.

Excess body mass helps protect against osteoporosis. As a result, researchers have been able to show that people who successfully lose weight have greater bone loss compared with those who do not lose weight. Therefore, people who lose weight need to be particularly vigilant about preventing osteoporotic fractures.

Nutritional supplements that may be helpful

Although insufficient when used as the only intervention, calcium supplements help prevent osteoporosis. Though some of the research remains controversial, the protective effect of calcium on bone mass is one of very few health claims permitted on supplement labels by the U.S. Food and Drug Administration.

In some studies, higher calcium intake has not correlated with a reduced risk of osteoporosis—for example, in women shortly after becoming menopausal or in men. However, after about three years of menopause, calcium supplementation does appear to take on a protective effect for women. Even the most positive trials using isolated calcium supplementation show only minor effects on bone mass. Nonetheless, a review of the research shows that calcium supplementation plus hormone replacement therapy is much more effective than hormone replacement therapy without calcium. Double-blind research has found that increasing calcium intake results in greater bone mass in girls. An analysis of many trials investigating the effects of calcium supplementation in premenopausal women has also shown a significant positive effect. Most doctors recommend calcium supplementation as a way to partially reduce the risk of osteoporosis and to help people already diagnosed with the condition. In order to achieve the 1,500 mg per day calcium intake many researchers deem optimal, 800 to 1,000 mg of supplemental calcium are generally added to the 500 to 700 mg readily obtainable from the diet.

While phosphorus is essential for bone formation, most people do not require phosphorus supplementation, because the typical western diet provides ample or even excessive amounts of phosphorus. One study, however, has shown that taking calcium can interfere with the absorption of phosphorus, potentially leading to phosphorus deficiency in elderly people, whose diets may contain less phosphorus. The authors of this study recommend that, for elderly people, at least some of the supplemental calcium be taken in the form of tricalcium phosphate or some other phosphorus-containing preparation.

Ipriflavone is a synthetic flavonoid derived from the soy isoflavone called daidzein. It promotes the incorporation of calcium into bone and inhibits bone breakdown, thus preventing and reversing osteoporosis. Many clinical trials, including numerous double-blind trials, have consistently shown that long-term treatment with 600 mg of ipriflavone per day, along with 1,000 mg supplemental calcium, is both safe and effective in halting bone loss in postmenopausal women or in women who have had their ovaries removed. Ipriflavone has also been found to improve bone density in established cases of osteoporosis in most, but not all, clinical trials. Some studies have shown that ipriflavone therapy not only stops bone loss, it also actually increases bone density and significantly reduces the number of vertebral fractures and amount of bone pain.

However, one double-blind study has failed to confirm the beneficial effect of ipriflavone. In that study, ipriflavone was no more effective than a placebo for preventing bone loss in postmenopausal women with osteoporosis. The women in this negative study were older (average age, 63.3 years) than those in most other ipriflavone studies and had relatively severe osteoporosis. It is possible that ipriflavone works only in younger women or in those with less severe osteoporosis.

Vitamin D increases calcium absorption, and blood levels of vitamin D are directly related to the strength of bones. Mild deficiency of vitamin D is common in the fit, active elderly population and leads to an acceleration of age-related loss of bone mass and an increased risk of fracture. In double-blind research, vitamin D supplementation has reduced bone loss in women who consume insufficient vitamin D from food and slowed bone loss in people with osteoporosis. However, the effect of vitamin D supplementation on osteoporosis risk remains surprisingly unclear, with some trials reporting little if any benefit. Moreover, trials reporting reduced risk of fracture have usually combined vitamin

D with calcium supplementation, making it difficult to assess how much benefit is caused by supplementation with vitamin D alone.

Impaired balance and increased body sway are important causes of falls in elderly people with osteoporosis. Vitamin D works with calcium to prevent some musculoskeletal causes of falls. In a double-blind trial, elderly women who were given 800 IU per day of vitamin D and 1,200 mg per day of calcium had a significantly lower rate of falls and subsequent fractures than did women given the same amount of calcium alone.

Despite inconsistency in the research, many doctors recommend 400 to 800 IU per day of supplemental vitamin D, depending upon dietary intake and exposure to sunlight.

A preliminary trial found that elderly women with osteoporosis who were given 4 grams of fish oil per day for four months had improved calcium absorption and evidence of new bone formation. Fish oil combined with evening primrose oil (EPO) may confer added benefits. In a controlled trial, women received 6 grams of a combination of EPO and fish oil, or a matching placebo, plus 600 mg of calcium per day for three years. The EPO/fish oil group experienced no spinal bone loss in the first 18 months and a significant 3.1% increase in spinal bone mineral density during the last 18 months.

Vitamin K is needed for bone formation. People with osteoporosis have been reported to have low blood levels and low dietary intake of vitamin K. One study found that postmenopausal (though not premenopausal) women may reduce urinary loss of calcium by taking 1 mg of vitamin K per day. People with osteoporosis given large amounts of vitamin K2 (45 mg per day) have shown an increase in bone density after six months[81] and decreased bone loss after one or two years.

Other preliminary studies have reported that vitamin K supplementation increases bone formation in some women and that higher vitamin K intake correlates with greater bone mineral density. Some doctors recommend 1 mg vitamin K1 to postmenopausal women as a way to help maintain bone mass, though optimal intake remains unknown.
In a preliminary study, people with osteoporosis were reported to be at high risk for magnesium malabsorption. Both bone and blood levels of magnesium have been reported to be low in people with osteoporosis. Supplemental magnesium has reduced markers of bone loss in men. Supplementing with 250 mg up to 750 mg per day of magnesium arrested bone loss or increased bone mass in 87% of people with osteoporosis in a two-year, controlled trial. Some doctors recommend that people with osteoporosis supplement with 350 mg of magnesium per day.

One trial studying postmenopausal women combined hormone replacement therapy with magnesium (600 mg per day), calcium (500 mg per day), vitamin C, B vitamins, vitamin D, zinc, copper, manganese, boron, and other nutrients for an eight- to nine-month period. In addition, participants were told to avoid processed foods, limit protein intake, emphasize vegetable over animal protein, and limit consumption of salt, sugar, alcohol, coffee, tea, chocolate, and tobacco. Bone density increased a remarkable 11%, compared to only 0.7% in women receiving hormone replacement alone.

Levels of zinc in both blood and bone have been reported to be low in people with osteoporosis, and urinary loss of zinc has been reported to be high. In one trial, men consuming only 10 mg of zinc per day from food had almost twice the risk of

osteoporotic fractures compared with those eating significantly higher levels of zinc in their diets. Whether zinc supplementation protects against bone loss has not yet been proven, though in one trial, supplementation with several minerals including zinc and calcium was more effective than calcium by itself. Many doctors recommend that people with osteoporosis, as well as those trying to protect themselves from this disease, supplement with 10 to 30 mg of zinc per day.

Copper is needed for normal bone synthesis. Recently, a two-year, controlled trial reported that 3 mg of copper per day reduced bone loss. When taken over a shorter period of time (six weeks), the same level of copper supplementation had no effect on biochemical markers of bone loss. Some doctors recommend 2 to 3 mg of copper per day, particularly if zinc is also being taken, in order to prevent a deficiency. Supplemental zinc significantly depletes copper stores, so people taking zinc supplements for more than a few weeks generally need to supplement with copper also. All minerals discussed so far—calcium, magnesium, zinc, and copper—are sometimes found at appropriate levels in high-potency multivitamin-mineral supplements.

Boron supplementation has been reported to reduce urinary loss of calcium and magnesium in some, but not all, preliminary research. However, those who are already supplementing with magnesium appear to achieve no additional calcium-sparing benefit when boron is added. Finally, in the original report claiming that boron reduced loss of calcium, the effect was achieved by significantly increasing oestrogen and testosterone levels, hormones that have been linked to cancer risks. Therefore, it makes sense for people with osteoporosis to supplement with magnesium instead of, rather than in addition to, boron.

Interest in the effect of manganese and bone health began when famed basketball player Bill Walton's repeated fractures were halted with manganese supplementation. A subsequent, unpublished study reported manganese deficiency in a small group of osteoporotic women. Since then, a combination of minerals including manganese was reported to halt bone loss. However, no human trial has investigated the effect of manganese supplementation alone on bone mass. Nonetheless, some doctors recommend 10 to 20 mg of manganese per day to people concerned with maintenance of bone mass.

Silicon is required in trace amounts for normal bone formation, and supplementation with silicon has increased bone formation in animals. In preliminary human research, supplementation with silicon increased bone mineral density in a small group of people with osteoporosis. Optimal supplemental levels remain unknown, though some multivitamin-mineral supplements now contain small amounts of this trace mineral.

Strontium may play a role in bone formation, and preliminary evidence suggests that women with osteoporosis may have reduced absorption of strontium. The first medical use of strontium was described in 1884. (Strontium supplements do not contain the radioactive form of strontium that is a component of nuclear fallout.) Years ago in a preliminary trial, people with osteoporosis were given 1.7 grams of strontium for a period of time ranging between three months and three years; afterward, they reported a significant reduction in bone pain, and there was evidence suggesting their bone mass had increased. Strontium preparations, providing 200 to 400 mg per day, were used for decades during the first half of the twentieth century without any apparent toxicity.

Strontium supplementation may inhibit bone breakdown by protecting vulnerable bone surfaces.

Increased bone formation and decreased bone pain were also reported in six people with osteoporosis given 600 to 700 mg of stable strontium per day. Although levels used in these preliminary studies have been very high, optimal intake remains unknown. Some doctors recommend only 1 to 3 mg per day—less than many people currently consume from their diets, but an amount that has begun to appear in some mineral formulas geared toward bone health.

Folic acid, vitamin B6, and vitamin B12 are known to reduce blood levels of the amino acid called homocysteine in the body, and homocysteinuria, a condition associated with high homocysteine levels, frequently causes osteoporosis. Although some healthcare practitioners have suggested these vitamins might help prevent osteoporosis by lowering homocysteine, no research has explored this relationship. For the purpose of lowering homocysteine, amounts of folic acid and vitamins B6 and B12 found in high-potency B-complex supplements and multivitamins should be adequate.

Preliminary evidence suggests that progesterone might, in theory, reduce the risk of osteoporosis. A preliminary trial using topically applied natural progesterone cream in combination with dietary changes, exercise, vitamin and calcium supplementation, and oestrogen therapy reported large gains in bone density over a three-year period in a small group of postmenopausal women, but no comparison was made to examine the effect of using the same protocol without progesterone. Other trials have reported that adding natural progesterone to oestrogen therapy did not improve the bone-sparing effects of oestrogen when taken alone and that progesterone applied topically every day for a year did not reduce bone loss.

In a preliminary trial, bone mineral density increased among healthy elderly women and men who were given 50 mg per day of DHEA as a supplement. It is not known if supplementation would have similar effects in people with established osteoporosis.
Some whey proteins may reduce bone loss. Milk basic protein (MBP) is a mixture of some of the proteins found in whey protein. A preliminary trial found that 300 mg per day of MBP improved blood measures of bone metabolism in men, suggesting more bone formation was occurring than bone loss. A double-blind trial found that women taking 40 mg per day of MBP for six months had greater gains in bone density compared with those taking a placebo. No osteoporosis-related research has been done using complete whey protein mixtures.

Herbs that may be helpful

Horsetail is a rich source of silicon, and preliminary research suggests that this trace mineral may help maintain bone mass. Effects of horsetail supplementation on bone mass have not been studied.

Black cohosh has been shown to improve bone mineral density in animals fed a low calcium diet but it has not been studied for this purpose in humans.

Pain

Pain is a sensation that is transmitted from an area of tissue damage or stress along the sensory nerves to the brain. The brain interprets the information as the sensation of pain.

Substances that decrease pain either interfere with the ability of nerves to conduct messages, or alter the brain's capacity to receive sensations.
Pain may be a symptom of an underlying pathological condition, such as inflammation. It may also be due to other causes, such as bruising, infection, burns, headaches, and sprains and strains. Use caution when treating pain without understanding its cause—this may delay diagnosis of conditions that could continue to worsen without medical attention.

What are the symptoms of pain?

Symptoms of pain include discomfort that is often worsened by movement or pressure and may be associated with irritability, problems sleeping, and fatigue. People with pain may have uncomfortable sensations described as burning, sharp, stabbing, aching, throbbing, tingling, shooting, dull, heavy, and tight.

Lifestyle changes that may be helpful

Body weight may be related to pain tolerance. One study indicated women who are more than 30% above the ideal weight for their age experience pain more quickly and more intensely than do women of ideal weight. No research has investigated the effect of weight loss on pain tolerance.

Exercise increases pain tolerance in some situations, in part because exercise may raise levels of naturally occurring painkillers (endorphins and enkephalins). Many types of chronic pain are helped by exercise, though some types of physical activity may aggravate certain painful conditions. People who want to initiate an exercise program for increasing pain tolerance should first consult a qualified health professional.

Nutritional supplements that may be helpful

Certain amino acids have been found to raise pain thresholds and increase tolerance to pain. One of these, a synthetic amino acid called D-phenylalanine (DPA), decreases pain by blocking the enzymes that break down endorphins and enkephalins, the body's natural pain-killing chemicals. DPA may also produce pain relief by other mechanisms, which are not well understood.

In animal studies, DPA decreased chronic pain within 15 minutes of administration and the effects lasted up to six days. It also decreased responses to acute pain. These findings have been independently verified in at least five other studies. Clinical studies on humans suggest DPA may inhibit some types of chronic pain, but it has little effect on most types of acute pain.

Most human research has tested the pain-relieving effects of 750 to 1,000 mg per day of DPA taken for several weeks of continuous or intermittent use. The results of this research have been mixed, with some trials reporting efficacy, others reporting no difference from placebo, and some reporting equivocal results. It appears that DPA may only work for some people, but a trial period of supplementation seems worthwhile for many types of chronic pain until more is known. If DPA is not available, a related

product, D,L-phenylalanine (DLPA), may be substituted at amounts of 1,500 to 2,000 mg per day.

As early as 1981, preliminary human research showed that DPA made the pain-inhibiting effects of acupuncture stronger. One controlled animal study and two controlled trials in humans showed that DPA taken the day before acupuncture increased the effectiveness of acupuncture in reducing both acute dental and chronic low back pain.

Other amino acids may be beneficial in reducing pain. In the central nervous system, L-tryptophan serves as a precursor to serotonin. Serotonin participates in the regulation of mood and may alter responses to pain. In a preliminary trial, 2,750 mg per day of L-tryptophan decreased pain sensitivity. Another preliminary trial found that L-tryptophan (500 mg every four hours) taken the day before a dental procedure significantly decreased the postoperative pain experienced by patients. In another preliminary trial, 3 grams of L-tryptophan taken daily for four weeks significantly decreased pain in a group of people with chronic jaw pain. No research has been published investigating the pain control potential of 5-hydroxytryptophan (5-HTP), another serotonin precursor that, unlike L-tryptophan, is currently available without a prescription.

Vitamin B12 has exhibited pain-killing properties in animal studies. In humans with vertebral pain syndromes, injections of massive amounts of vitamin B12 (5,000 to 10,000 mcg per day) have reportedly provided pain relief. Further studies are needed to confirm the efficacy of this treatment.

Herbs that may be helpful

Capsaicin is an extract of cayenne pepper that may ease many types of chronic pain when applied regularly to the skin. In animal studies, capsaicin was consistently effective at reducing pain when given by mouth, by injection, or when applied topically. A controlled trial in humans found that application of a solution of capsaicin (0.075%) decreased sensitivity of skin to all noxious stimuli. One review article deemed the research on capsaicin's pain-relieving properties "inconclusive." However, in several uncontrolled and at least five controlled clinical trials, capsaicin has been consistently shown to decrease the pain of many disorders, including trigeminal neuralgia, shingles, diabetic neuropathy, osteoarthritis, and cluster headaches. For treatment of chronic pain, capsaicin ointment or cream (standardized to 0.025 to 0.075% capsaicin) is typically applied to the painful area four times per day. It is common to experience stinging and burning at the site of application, especially for the first week of treatment; avoid getting it in the eyes, mouth, or open sores.

Preliminary reports from Chinese researchers also note that 75 mg per day of THP (an alkaloid from the plant corydalis) was effective in reducing nerve pain in 78% of those tested.

As early as 1763, use of willow bark to decrease pain and inflammation was reported. Its constituents are chemically related to aspirin. These constituents may decrease pain by two methods: by interfering with the process of inflammation, and by interfering with pain-producing nerves in the spinal cord. No human studies have investigated the pain-relieving potential of willow bark, and questions have been raised as to the actual absorption of willow bark's pain-relieving constituents. The potential pain-reducing action of willow is typically slower than that of aspirin.

In animal research, alcohol/water extracts of plants from the genus phyllanthus (25 to 200 mg per 2.2 pounds body weight) have shown a marked ability to decrease pain. This family includes the plants Phyllanthus urinaria, P. caroliniensis, P. amarus, and P. niruri. Like aspirin, phyllanthus extracts appear to reduce pain by decreasing inflammation. Although they are six to seven times more potent than aspirin or acetaminophen in test tube studies, extracts of these plants also demonstrate liver-protective properties, suggesting they may be safer than drugs such as acetaminophen, which has well-documented toxicity to the liver. The usefulness of phyllanthus extracts for treating pain in humans is unknown.

Other herbs that have been historically used to relieve pain (although there are no modern scientific studies yet available) include valerian, passion flower, American Scullcap, Piscidia erythrina, and crampbark (Viburnum opulus).

Holistic approaches that may be helpful

Transcutaneous electrical nerve stimulation (TENS) is a form of electrical physical therapy that has been used in the treatment of pain since the early 1970s. Pads are placed on the skin and a mild electrical current is sent through to block pain sensations. Many TENS units are small, portable, and may be hidden under clothing. A review of the first ten years of research on TENS described success rates in treating chronic pain varying from 12.5% to 92% after one year of treatment.[49] Variations in success rates were attributed to differences in the type of pain the TENS was treating. More current research identifies specific conditions that consistently respond well to TENS therapy: rheumatoid arthritis, osteoarthritis, low back pain, phantom limb pain, and post-herpetic nerve pain (shingles). Pain caused by pinched nerves in the spine responds poorly to TENS therapy. While a small number of controlled trials have reported no benefit, most evidence suggests TENS is an effective form of therapy for many types of pain.

Relaxation exercises may decrease the perception of pain. Pain increases as anxiety increases; using methods to decrease anxiety may help reduce pain. In one controlled hospital study, people who were taught mind-body relaxation techniques reported less pain, less difficulty sleeping, and fewer symptoms of depression or anxiety than did people who were not taught the techniques.

Acupuncture has been shown to decrease pain by acting on the enkephalin-based, pain-killing pathways. In 1997, the National Institutes of Health (NIH) stated that acupuncture is useful for muscular, skeletal, and generalized pain, as well as for anaesthesia and post-operative pain. The NIH statement was based on a critical review of over 67 controlled trials of acupuncture for pain control.

Practitioners of manipulation report that it often produces immediate pain relief either in the area manipulated or elsewhere. Controlled trials have found that people given spinal manipulation may experience reduction in pain sensitivity of the skin in related areas, a reduction in joint and muscle tenderness in the area manipulated, and a decrease in elbow tenderness when the neck was manipulated. One study showed no effect of lower spine manipulation on sensitivity to deep pressure over low back muscles and ligaments. Some researchers have speculated that joint manipulation affects pain by enhancing the effects of endorphins. However, only one of three controlled studies has shown an effect of manipulation on endorphin levels.

Hypnosis has been shown to significantly reduce pain associated with office surgical procedures that are performed while the patient is conscious (i.e., without general anaesthesia). People undergoing office surgical procedures received standard care, structured attention or self-hypnotic relaxation in one study. Those using self-hypnosis had no increases in pain during the procedures, compared to those in the other groups. Hypnosis also appeared to stabilize bleeding, decrease the requirement for narcotic pain drugs during the procedure, and shorten procedure time.

Peptic Ulcer

Peptic ulcers are erosions or open sores in the mucous lining of the stomach or duodenum (the first part of the small intestine). The term “peptic” distinguishes peptic ulcers from ulcerations that affect other parts of the body (e.g., diabetic leg ulcers).

Peptic ulcer should never be treated without proper diagnosis. They are usually caused by infection from Helicobacter pylori (H. pylori). People with peptic ulcer due to infection should discuss conventional treatment directed toward eradicating the organism—various combinations of antibiotics, acid blockers, and bismuth—with a medical doctor. Ulcers can also be caused or aggravated by stress, alcohol, smoking, and dietary factors.

What are the symptoms of peptic ulcer?

Peptic ulcers are occasionally painless. However, the most common symptom is a dull ache in the upper abdomen that usually occurs two to three hours after a meal; the ache is relieved by eating. Other common symptoms include weight loss, bloating, belching, and nausea. Untreated, peptic ulcers often bleed and may cause sharp burning pain in the area of the stomach or just below it.

Dietary changes that may be helpful

People with ulcers have been reported to eat more sugar than people without ulcers, though this link may only occur in those with a genetic susceptibility toward ulcer formation. Sugar has also been reported to increase stomach acidity, which could aggravate ulcer symptoms.

Salt is a stomach and intestinal irritant. Higher intakes of salt have been linked to higher risk of stomach (though not duodenal) ulcer. As a result of these reports, some doctors suggest that people with ulcers should restrict the use of both sugar and salt, although the benefit of such dietary changes remains unknown.

Many years ago, researchers reported that cabbage juice accelerated healing of peptic ulcers. Drinking a quart of cabbage juice per day was necessary for symptom relief in some reports. Although only preliminary modern research supports this approach, many doctors claim considerable success using one quart per day for 10 to 14 days, with ulcer symptoms frequently decreasing in only a few days. Carrot juice may be added to improve the flavour.

Fibre slows the movement of food and acidic fluid from the stomach to the intestines, which should help those with duodenal, though not stomach, ulcers. When people with recently healed duodenal ulcers were put on a long-term (six-month), high-fibre diet, the rate of ulcer recurrence was dramatically reduced in one controlled study, though short-

term (four-week) use of fibre in people with active duodenal ulcers led to only negligible improvement.

The relationship between food allergies and peptic ulcers has been reported at least as far back as the 1930s. Exposing the lining of the stomach to foods to which a person is allergic has been reported to cause bleeding in the stomach. Although additional research is needed, avoiding food allergens may be helpful for people with peptic ulcers. Consult with a doctor to determine food sensitivities.

Lifestyle changes that may be helpful

Aspirin and related drugs (non-steroidal anti-inflammatory drugs), alcohol, coffee (including decaf), and tea can aggravate or interfere with the healing of peptic ulcers. Smoking is also known to slow ulcer healing. Whether or not an ulcer is caused by infection, people with peptic ulcer should avoid use of these substances.

Nutritional supplements that may be helpful

Vitamin A is needed to heal the linings (called mucous membranes) of the stomach and intestines. In one controlled trial, vitamin A supplementation facilitated healing in a small group of people with stomach ulcer. The amount used in that study (150,000 IU per day) can be toxic and may also cause birth defects. Such a high dose should not be taken by a pregnant woman, by a woman who could become pregnant, or by anyone else without careful supervision from a doctor. Objective evidence of ulcer healing from taking vitamin A has been reported by the same research group. The effect of lower amounts of vitamin A has not been studied in people with peptic ulcer.

Zinc is also needed for the repair of damaged tissue and has protected against stomach ulceration in animal studies. In Europe, zinc combined with acexamic acid, an anti-inflammatory substance, is used as a drug in the treatment of peptic ulcers. In a small controlled trial, high amounts of zinc accelerated the healing of gastric ulcers compared with placebo. Some doctors suspect that such an exceptionally high intake of zinc may be unnecessary, suggesting instead that people with ulcers wishing to take zinc supplements use only 25 to 50 mg of zinc per day. Even at these lower levels, 1 to 3 mg of copper per day must be taken to avoid copper deficiency that would otherwise be induced by the zinc supplementation.

Experimental animal studies have shown that a zinc salt of the amino acid carnosine exerts significant protection against ulcer formation and promotes the healing of existing ulcers. However, because zinc by itself has been shown to be helpful against peptic ulcer, it is not known how much of the beneficial effect was due to the carnosine. Clinical studies in humans demonstrated that this compound can help eradicate H. pylori, an organism that has been linked to peptic ulcer and stomach cancer. The amount of the zinc carnosine complex used in research studies for eradication of H. pylori is 150 mg twice daily.

Glutamine, an amino acid, is the principal source of energy for cells that line the small intestine and stomach. More than 40 years ago, glutamine was reported to help people with peptic ulcer in a preliminary trial. Glutamine has also prevented stress ulcers triggered by severe burns in another preliminary study. Despite the limited amount of published research, some doctors suggest 500 to 1,000 mg of glutamine taken two to three times per day to help people overcome peptic ulcers.

Oral supplementation with dimethyl sulfoxide (DMSO) reduced relapse rates for peptic ulcer significantly better than did placebo or the ulcer drug cimetidine (Tagamet®) in one study. Previous research showed that DMSO in combination with cimetidine was more effective than cimetidine alone. These trials used 500 mg of DMSO taken four times per day. The authors of these trials believe the antioxidant activity of DMSO may have a protective effect. Oral supplementation with DMSO should not be attempted without the supervision of a doctor.

Little is known about the effects of vitamin C supplementation for people with peptic ulcer. People with gastritis, a related condition, have been found to have low levels of vitamin C in their stomach juice. Vitamin C may also help eradicate H. pylori in people with gastritis. Vitamin C may one day prove to have a therapeutic effect for people with peptic ulcer; however, further research in this area is needed.

Herbs that may be helpful

Liquorice root has a long history of use for soothing inflamed and injured mucous membranes in the digestive tract. Liquorice may protect the stomach and duodenum by increasing production of mucin, a substance that protects the lining of these organs against stomach acid and other harmful substances. According to laboratory research, flavonoids in liquorice may also inhibit growth of H. pylori.

For people with peptic ulcer, many doctors who use herbal medicine use the deglycyrrhizinated form of liquorice (DGL). In making DGL, the portion of liquorice root that can increase blood pressure and cause water retention is almost completely removed, while the mucous-membrane-healing part of the root is retained. In some reports, DGL has compared favourably to the popular drug cimetidine (Tagamet®) for treatment of peptic ulcer,while in other trials cimetidine has appeared initially more effective. After DGL and cimetidine were discontinued, though, one study reported fewer recurrences in the DGL group than in the cimetidine group.

Though not every trial has reported efficacy, most studies find DGL to facilitate healing of peptic ulcer. A review of the DGL research shows that the studies not reporting efficacy used capsules, and the trials finding DGL to be helpful used chewable tablets.[41] Doctors typically suggest taking one to two chewable tablets of DGL (250 to 500 mg) 15 minutes before meals and one to two hours before bedtime.
The gummy extract of Pistachia lentiscus, also known as mastic or gum mastic, has been shown in one preliminary study and one double-blind study to heal peptic ulcers. This may be related to its ability to kill H. pylori in test tubes.

Ayurvedic doctors in India have traditionally used dried banana powder (Musa paradisiaca) to treat ulcers. In animal studies, banana powder protects the lining of the stomach from acid. A human trial has also found dried banana helpful in those with peptic ulcer. In that report, two capsules of dried raw banana powder taken four times per day for eight weeks led to significant improvement. Bananas and unsweetened banana chips may be good substitutes, although ideal intake remains unknown.

Chamomile has a soothing effect on inflamed and irritated mucous membranes. It is also high in the flavonoid apigenin—another flavonoid that has inhibited growth of H. pylori in test tubes. Many doctors recommend drinking two to three cups of strong chamomile tea each day. The tea can be made by combining 3 to 5 ml of chamomile tincture with hot

water or by steeping 2 to 3 tsp of chamomile flowers in the water, covered, for 10 to 15 minutes. Chamomile is also available in capsules; two may be taken three times per day. Calendula is another plant with anti-inflammatory and healing activities that can be used as part of a traditional medicine approach to peptic ulcers. The same amount as chamomile can be used.

Marshmallow is high in mucilage. High-mucilage-containing herbs have a long history of use for irritated or inflamed mucous membranes in the digestive system, though no clinical research has yet investigated effects in people with peptic ulcer.

Garlic has been reported to have anti-Helicobacter activity in test-tube studies. In a preliminary trial, garlic supplementation (300 mg in tablets three times daily for eight weeks) failed to eradicate H. pylori in participants with active infections. In another preliminary trial, participants with active H. pylori infections added 10 sliced cloves of garlic to a meal. The addition of garlic failed to inhibit the growth of the organism. Further trials using garlic extracts are needed to validate the anti-Helicobacter activity of garlic observed in test tubes. Until then, evidence to support the use of garlic for H. pylori-related peptic ulcers remains weak.

Extracts of the herb corydalis are not only helpful as pain-relief agents but also may be useful in the treatment of stomach ulcers. In a study of people with stomach and intestinal ulcers or chronic inflammation of the stomach lining, 90 to 120 mg of corydalis extract per day (equal to 5 to 10 grams of the crude herb) was found to be effective in 76% of the participants.

Comfrey has a long tradition of use as a topical agent for improving healing of wounds and skin ulcers. It is also used for people with gastrointestinal problems, including stomach ulcers, though these traditional uses have yet to be tested in scientific studies. People should only use comfrey preparations made from the leaves and avoid those made from the root.

Because of the anti-inflammatory and healing effects of plantain, it may be beneficial in some people with peptic ulcer. Clinical trials have not been done to confirm this possibility.

Holistic approaches that may be helpful

Emotional stress has been shown to increase acid production in the stomach. The reported association between stress and peptic ulcer might be attributable to a stress-induced increase in gastric acidity. During the air raids of London in World War II, British physicians observed an increase of more than 50% in the incidence of ruptured peptic ulcers. More recently, an increased incidence of bleeding stomach ulcers was seen in survivors of the Hanshin-Awaji earthquake in Japan. Whether stress reduction techniques or psychological counselling helps prevent ulcers or ulcer recurrence has not been adequately studied in medical trials.

Piles

Haemorrhoids are enlarged raised veins in the anus or rectum.

Common haemorrhoids are often linked to both diarrhoea and constipation. Although the belief that haemorrhoids are caused by constipation has been questioned by researchers, most doctors feel that many haemorrhoids are triggered by the straining that accompanies chronic constipation. Therefore, natural approaches to haemorrhoids sometimes focus on overcoming constipation.

What are the symptoms of haemorrhoids?

Symptoms of haemorrhoids may include painful swelling or a lump in the anus that can bleed and become inflamed, often causing discomfort and itching. There may also be bright red blood on the toilet paper, the stool, or in the toilet bowl.

Dietary changes that may be helpful

Populations in which fibre intake is high have a very low incidence of haemorrhoids. Insoluble fibre—the kind found primarily in whole grains and vegetables—increases the bulk of stool. Drinking water with a high-fibre meal or a fibre supplement results in softer, bulkier stools, which can move more easily. As a result, most doctors believe that fibre in combination with increased intake of liquids helps to treat people with haemorrhoids. Nonetheless, few clinical trials compare the effects of fibre supplementation against the effects of placebo in haemorrhoid sufferers.

Nutritional supplements that may be helpful

A number of flavonoids have been shown to have anti-inflammatory effects and/or to strengthen blood vessels. These effects could, in theory, be beneficial for people with haemorrhoids. Most, but not all, double-blind trials using a group of semi synthetic flavonoids (hydroxyethylrutosides derived from rutin) have demonstrated significant improvements in itching, bleeding, and other symptoms associated with haemorrhoids when people used supplements of 600–4,000 mg per day.

Other trials have evaluated Daflon, a product containing the food-derived flavonoids diosmin (90%) and hesperidin (10%). An uncontrolled trial reported that Daflon produced symptom relief in two-thirds of pregnant women with haemorrhoids. Double-blind trials have produced conflicting results about the effects of Daflon in people with hemorrhoids.[10] [11] Amounts of flavonoids used in Daflon trials ranged from 1,000 to 3,000 mg per day. Diosmin and hesperidin are available separately as dietary supplements.

Some doctors recommend flavonoid supplements for people with haemorrhoids. However, many different flavonoids occur in food and supplements, and additional research is needed to determine which flavonoids are most effective against haemorrhoids.

Herbs that may be helpful

Constipation is believed to worsen haemorrhoid symptoms, and thus, bulk-forming fibres are often recommended for those with haemorrhoids. A double-blind trial reported that 7 grams of psyllium, an herb high in fibre, taken three times daily reduced the pain and bleeding associated with haemorrhoids. Some healthcare professionals recommend taking two tablespoons of psyllium seeds or 1 teaspoon of psyllium husks two or three

times per day mixed with water or juice. It is important to maintain adequate fluid intake while using psyllium.

Topically applied astringent herbs have been used traditionally as a treatment for haemorrhoids. A leading astringent herb for topical use is witch hazel, which is typically applied to haemorrhoids three or four times per day in an ointment base.

Horse chestnut extracts have been reported from a double-blind trial to reduce symptoms of haemorrhoids. Some doctors recommend taking horse chestnut seed extracts standardized for aescin (also known as escin) content (16–21%), or an isolated aescin preparation, providing 90 to 150 mg of aescin per day.

Premenstrual Syndrome

Premenstrual syndrome (PMS) is a poorly understood complex of symptoms occurring a week to ten days before the start of each menstrual cycle.

PMS is believed to be triggered by changes in progesterone and oestrogen levels.

What are the symptoms of PMS?

Many premenopausal women suffer from symptoms of PMS at different points in their menstrual cycle. Symptoms include cramping, bloating, mood changes, and breast tenderness tied to the menstrual cycle.

Dietary changes that may be helpful

Women who eat more sugary foods have been reported to have an increased risk of PMS. Some doctors recommend that women with PMS cut back on sugar consumption for several months to see if it reduces their symptoms. However, no trials have yet to study the isolated effects of sugar restriction in women with PMS.

Alcohol can affect hormone metabolism, and alcoholic women are more likely to suffer PMS than are non-alcoholic women. Some doctors recommend that women with PMS avoid alcohol for several months to evaluate whether such a change will reduce symptoms.

In a study of Chinese women, increasing tea consumption was associated with increasing prevalence of PMS. Among a group of college students in the United States, consumption of caffeine-containing beverages was associated with increases in both the prevalence and severity of PMS. Moreover, the more caffeine women consumed, the more likely they were to suffer from PMS. A preliminary study showed that women with heavy caffeine consumption were more likely to have shorter menstrual periods and shorter cycle length compared with women who did not consume caffeine. Some doctors recommend that women with PMS avoid caffeine.

Several studies suggest that diets low in fat or high in fibre may help to reduce symptoms of PMS. Many doctors recommend diets very low in meat and dairy fat and high in fruit, vegetables, and whole grains.

Lifestyle changes that may be helpful

Women with PMS who jogged an average of about 12 miles a week for six months were reported to experience a reduction in breast tenderness, fluid retention, depression, and

stress. Doctors frequently recommend regular exercise as a way to reduce symptoms of PMS.

Nutritional supplements that may be helpful

Many, though not all, clinical trials show that taking 50–400 mg of vitamin B6 per day for several months help relieve symptoms of PMS. A composite analysis of the best designed controlled trials shows that vitamin B6 is more than twice as likely to reduce symptoms of PMS as is placebo. Many doctors suggest 100–400 mg per day for at least three months. However, intakes greater than 200 mg per day can cause side effects and should never be taken without the supervision of a healthcare professional.

Women who consume more calcium from their diets are less likely to suffer severe PMS.[16] A large double-blind trial found that women who took 1,200 mg per day of calcium for three menstrual cycles had a 48% reduction in PMS symptoms, compared to a 30% reduction in the placebo group. Other double-blind trials have shown that supplementing 1,000 mg of calcium per day relieves premenstrual symptoms.

Women with PMS have been shown to have impaired conversion of linoleic acid (an essential fatty acid) to gamma linolenic acid (GLA). Because a deficiency of GLA might, in theory, be a factor in PMS and because evening primrose oil (EPO) contains significant amounts of GLA, researchers have studied EPO as a potential way to reduce symptoms of PMS. In several double-blind trials, EPO was found to be beneficial, whereas in other trials it was no more effective than placebo.

Despite these conflicting results, some doctors consider EPO to be worth a try; the amount usually recommended is 3–4 grams per day. EPO may work best when used over several menstrual cycles and may be more helpful in women with PMS who also experience breast tenderness or fibrocystic breast disease.

Women with PMS have been reported to be at increased risk of magnesium deficiency. Supplementing with magnesium may help reduce symptoms. In one double-blind trial using only 200 mg per day for two months, a significant reduction was reported for several symptoms related to PMS (fluid retention, weight gain, swelling of extremities, breast tenderness, and abdominal bloating). Magnesium has also been reported to be effective in reducing the symptoms of menstrual migraine headaches. While the ideal amount of magnesium has yet to be determined, some doctors recommend 400 mg per day. Effects of magnesium may begin to appear after two to three months.

A preliminary, uncontrolled trial found that women with severe PMS who took potassium supplements had complete resolution of PMS symptoms within four menstrual cycles. Most participants took 400 mg of potassium per day as potassium gluconate plus 200 mg of potassium per day as potassium chloride for the first two cycles, then switched to solely the gluconate form (600 mg potassium per day) for the remainder of the year-long trial. Without exception, all of the women found their symptoms (i.e., bloating, fatigue, irritability, etc.) decreasing gradually over three cycles and disappearing completely by the fourth cycle. Controlled trials are needed to confirm these preliminary observations.

The amino acid, L-tryptophan has been shown to help relieve PMS symptoms. In a double-blind trial, women with premenstrual discomfort received 6 grams per day of L-tryptophan or placebo for 17 days. Those who took L-tryptophan had significant improvement of symptoms, including mood swings, tension, irritability, breast sensitivity,

water retention, and headache. There was a slight reduction in premenstrual depression, but it was not statistically significant. L-tryptophan is available only by prescription. It has not been determined whether 5-hydroxytryptophan (5-HTP, a metabolic by-product of L-tryptophan that is available without prescription) has similar effects.

Although women with PMS do not appear to be deficient in vitamin E, a double-blind trial reported that 300 IU of vitamin E per day may decrease symptoms of PMS.

Some of the nutrients mentioned above appear together in multivitamin-mineral supplements. One double-blind trial used a multivitamin-mineral supplement containing vitamin B6 (600 mg per day), magnesium (500 mg per day), vitamin E (200 IU per day), vitamin A (25,000 IU per day), B-complex vitamins, and various other vitamins and minerals. This supplement was found to relieve each of four different categories of PMS symptoms. Related results have been reported in other clinical trials.

Most well-controlled trials have not found vaginally applied natural progesterone to be effective against the symptoms of premenstrual syndrome. Only anecdotal reports have claimed that orally or rectally administered progesterone may be effective. Progesterone is a hormone, and as such, there are concerns about its inappropriate use. A physician should be consulted before using this or other hormones. Few side effects have been associated with use of topical progesterone creams, but skin reactions may occur. The effect of natural progesterone on breast cancer risk remains unclear; some research suggests the possibility of increased risk, whereas other research points to a possible reduction in risk.

Very high amounts of vitamin A—100,000 IU per day or more—have reduced symptoms of PMS, but such an amount can cause serious side effects with long-term use. Women who are or who could become pregnant should not supplement with more than 10,000 IU (3,000 mcg) per day of vitamin A. Other people should not take more than 25,000 IU per day without the supervision of their doctor. As yet, no trials have explored the effects of these safer amounts of vitamin A in women suffering from PMS.

Many years ago, research linked B vitamin deficiencies to PMS in preliminary research. Based on that early work, some doctors recommend B-complex vitamins for women with PMS.

Herbs that may be helpful

Vitex has been shown to help re-establish normal balance of oestrogen and progesterone during the menstrual cycle. Vitex also blocks prolactin secretion in women with excessive levels of this hormone; excessive levels of prolactin can lead to breast tenderness and failure to ovulate. A double-blind trial has confirmed that vitex reduces mildly elevated levels of prolactin before a woman's period. Studies have shown that using vitex once in the morning over a period of several months helps normalize hormone balance and thus alleviate the symptoms of PMS. A preliminary trial and a double-blind trial have found that women taking 20 mg per day of a concentrated vitex extract for three menstrual cycles experience a significant reduction in symptoms of PMS.

Vitex has been shown to be as effective as 200 mg vitamin B6 in a double-blind trial of women with PMS.[53] Two surveys examined 1,542 women with PMS who had taken a German liquid extract of vitex for their PMS symptoms for as long as 16 years. With an

average intake of 42 drops per day, 92% of the women surveyed reported the effectiveness of vitex as “very good,” good,” or “satisfactory.”

Some healthcare practitioners recommend 40 drops of a liquid, concentrated vitex extract or one capsule of the equivalent dried, powdered extract once per day in the morning with some liquid. Vitex should be taken for at least four cycles to determine efficacy.

A double-blind trial has shown that standardized Ginkgo Biloba extract, when taken daily from day 16 of one menstrual cycle to day 5 of the next menstrual cycle, alleviates congestive and psychological symptoms of PMS better than placebo. The trial used 80 mg of a ginkgo extract two times per day.

In Traditional Chinese Medicine, dong quai is rarely used alone and is typically used in combination with herbs such as peony (Paeonia officinalis) and osha (Ligusticum porteri) for menopausal symptoms as well as for menstrual cramps. However, no clinical trials have been completed to determine the effectiveness of dong quai for PMS.

Black cohosh is approved in Germany for use in women with PMS. This approval appears to be based on historical use as there are no modern clinical trials to support the use of black cohosh for PMS.

Based on anecdotal evidence, yarrow tea has been used by European doctors when the main symptom of PMS is spastic pain. Combine 2–3 teaspoons of yarrow flowers with one cup of hot water, then cover and steep for 15 minutes. Drink three to five cups per day beginning two days before PMS symptoms usually commence. In addition, 1–3 cups of the tea added to hot or cold water can be used as a sitz bath.

Psoriasis

Psoriasis is a common, poorly understood condition that affects primarily the skin but may also affect nails. A related condition, psoriatic arthritis, affects joints.

The fact that some people with psoriasis improve while taking prescription drugs that interfere with the immune system suggests that the disease might result from a derangement of the immune system. A dermatologist should be consulted to confirm the diagnosis of psoriasis.

What are the symptoms of psoriasis?

The hallmark symptom of psoriasis is well-defined, red patches of skin covered by a silvery, flaky surface that has pinpoint spots of bleeding underneath if scraped. The patches typically appear during periodic flare-ups and are in the same area on both sides of the body. In some people with psoriasis, the fingernails and toenails may have white-coloured pits, lengthwise ridges down the nail, or yellowish spots, or may be thickened or may separate at the cut end.

Dietary changes that may be helpful

Ingestion of alcohol has been reported to be a risk factor for psoriasis in men but not women. It would therefore be prudent for men with psoriasis to restrict their intake of alcohol or avoid it entirely.

Anecdotal evidence suggests that people with psoriasis may improve on a hypoallergenic diet. Three trials have reported that eliminating gluten (found in wheat, rye, and barley) improved psoriasis for some people. A doctor can help people with psoriasis determine whether gluten or other foods are contributing to their skin condition.

Nutritional supplements that may be helpful

Fumaric acid, in the chemically bound form known as fumaric acid esters, has been shown in case studies, preliminary trials and double-blind trials to be effective against symptoms of psoriasis. However, because fumaric acid esters can cause significant side effects, they should be taken only under the supervision of a doctor familiar with their use. Nevertheless, these side effects have been reported to decrease in frequency over the course of treatment and, if they are closely monitored, rarely lead to significant toxicity.

In a double-blind trial, fish oil (10 grams per day) was found to improve the skin lesions of psoriasis. In another trial, supplementing with 3.6 grams per day of purified eicosapentaenoic acid (EPA, one of the fatty acids found in fish oil) reduced the severity of psoriasis after two to three months. That amount of EPA is usually contained in 20 grams of fish oil, a level that generally requires 20 pills to achieve. However, when purified EPA was used in combination with purified docosahexaenoic acid (DHA, another fatty acid contained in fish oil), no improvement was observed.

Additional research is needed to determine whether fish oil itself or some of its components are more effective for people with psoriasis. One trial showed that applying a preparation containing 10% fish oil directly to psoriatic lesions twice daily resulted in improvement after seven weeks. In addition, promising results were reported from a double-blind trial in which people with chronic plaque-type psoriasis received 4.2 g of EPA and 4.2 g of DHA or placebo intravenously each day for two weeks. Thirty-seven percent of those receiving the essential fatty acid infusions experienced greater than 50% reduction in the severity of their symptoms.

Supplementing with fish oil also may help prevent the increase in blood levels of triglycerides that occurs as a side effect of certain drugs used to treat psoriasis (e.g., etretinate and acitretin).

Folic acid antagonist drugs have been used to treat psoriasis. In one preliminary report, extremely high amounts of folic acid (20 mg taken four times per day), combined with an unspecified amount of vitamin C, led to significant improvement within three to six months in people with psoriasis who had not been taking folic acid antagonists; those who had previously taken these drugs saw a worsening of their condition.
Although some doctors have been impressed with the effectiveness of flaxseed oil (usually 1 to 3 tbsp per day) against psoriasis, there have been no published trials to support that observation.

The vitamin D that is present in food or manufactured by sunlight is converted in the body into a powerful hormone-like molecule called 1,25-dihydroxyvitamin D. That compound and a related naturally occurring molecule (1 alpha-hydroxyvitamin D3) have been found to reduce skin lesions when given orally to people with psoriasis. Topical application of these compounds has also been effective in some, but not all, trials. These activated forms of vitamin D are believed to help by preventing the excessive proliferation of cells that occurs in the skin of people with psoriasis. Because these

potent forms of vitamin D can cause potentially dangerous increases in blood levels of calcium, they are available only by prescription. Toxicity is usually less of a problem with activated vitamin D applied topically than with activated vitamin D taken orally. The use of these compounds (under the supervision of a qualified dermatologist) may be considered in difficult cases of psoriasis. The form of vitamin D that is available without a prescription is unlikely to be effective against psoriasis.

Herbs that may be helpful

Cayenne contains a resinous and pungent substance known as capsaicin. This chemical relieves pain and itching by depleting certain neurotransmitters from sensory nerves. In a double-blind trial, application of a capsaicin cream to the skin relieved both the itching and the skin lesions in people with psoriasis. Creams containing 0.025 to 0.075% capsaicin are generally used. There may be a burning sensation the first several times the cream is applied, but this usually become less pronounced with each use. The hands must be carefully and thoroughly washed after use, or gloves should be worn, to prevent the cream from accidentally reaching the eyes, nose, or mouth and causing a burning sensation. The cream should not be applied to areas of broken skin.

A double-blind trial in Pakistan found that topical application of an aloe extract (0.5%) in a cream was more effective than placebo in the treatment of adults with psoriasis. The aloe cream was applied three times per day for four weeks.

In traditional herbal texts, burdock root was believed to clear the bloodstream of toxins. It was used both internally and externally for psoriasis. Traditional herbalists recommend 2 to 4 ml of burdock root tincture per day. For the dried root preparation in tablet or capsule form, the common amount to take is 1 to 2 grams three times per day. Many herbal preparations will combine burdock root with other alterative herbs, such as yellow dock, red clover, or cleavers. Burdock root has not been studied in clinical trials to evaluate its efficacy in helping people with psoriasis.

Although clinical trials are lacking, some herbalists use the herb, coleus, in treating people with psoriasis.[33] Coleus extracts standardized to 18% forskolin are available, and 50 to 100 mg can be taken two to three times per day. Fluid extract can be taken in the amount of 2 to 4 ml three times per day.

An ointment containing Oregon grape (10% concentration) has been shown in a clinical trial to be mildly effective against moderate psoriasis but not more severe cases. Whole Oregon grape extracts were shown in one laboratory study to reduce inflammation often associated with psoriasis. In this study, isolated alkaloids from Oregon grape did not have this effect. This suggests that there are other active ingredients besides alkaloids in Oregon grape. Barberry, which is very similar to Oregon grape, is believed to have similar effects. An ointment, 10% of which contains Oregon grape or barberry extract, can be applied topically three times per day.

Holistic approaches that may be helpful

A preliminary trial treated 61 psoriasis patients with acupuncture that did not respond to conventional medical therapies. After an average of nine acupuncture treatments, 30 (49%) of the patients demonstrated almost complete clearance of the lesions, and 14 (23%) of the patients experienced a resolution for two-thirds of lesions. A controlled trial of 56 patients with psoriasis found, however, that acupuncture and “fake” acupuncture

resulted in similar, modest effects. More controlled trials are necessary to determine the usefulness of acupuncture in the treatment of psoriasis.

Stress reduction has been shown to accelerate healing of psoriatic plaques in a blinded trial.[38] Thirty-seven people with psoriasis about to undergo light therapy were randomly assigned to receive either topical ultraviolet light treatment alone or in combination with a mindfulness meditation-based stress reduction technique guided by audiotape. Those who received the stress-reduction intervention showed resolution of their psoriasis significantly faster than those who did not.

Hypnosis and suggestion have been shown in some cases to have a positive effect on psoriasis, further supporting the role of stress in the disorder. In one case report, 75% resolution of psoriasis resulted from using a hypnotic sensory-imagery technique. Hypnosis may be especially useful for psoriasis that appears to be activated by stress.

Rheumatoid Arthritis

Rheumatoid arthritis (RA) is a chronic inflammatory disease in which the immune system attacks the joints and sometimes other parts of the body. The cause of RA remains unknown.

What are the symptoms of rheumatoid arthritis?

The most common symptom of RA is joint pain and morning joint stiffness. Several joints on both sides of the body are usually affected, especially those of the hands, wrists, knees, and feet. Affected joints may feel warm or appear swollen. People with RA may have other symptoms, including weakness, fatigue, weight loss, and, occasionally, fever.

Dietary changes that may be helpful

Feeding a high-fat diet to animals who are susceptible to autoimmune disease has increased the severity of RA. People with RA have been reported to eat more fat, particularly animal fat, than those without RA. In short-term studies, diets completely free of fat have helped people with RA. Since at least some dietary fat is essential for humans, though, the significance of this finding is not clear.

Strictly vegetarian diets that are also very low in fat have been reported to reduce RA symptoms. In the 1950s through the 1970s, Max Warmbrand, a naturopathic doctor, used a very low-fat diet to treat people with RA. He recommended a diet free of meat, dairy, chemicals, sugar, eggs, and processed foods. A short-term (ten weeks) study employing a similar approach failed to produce beneficial effects. Long before publication of that negative report, however, Dr. Warmbrand had claimed that his diet took at least six months to achieve noticeable results. In one trial lasting 14 weeks—still significantly less than six months—a pure vegetarian, gluten-free (no wheat, rye, or barley) diet was gradually changed to permit dairy, leading to improvement in both symptoms and objective laboratory measures of disease. The extent to which a low-fat vegetarian diet (or one low in animal fat) would help people with RA remains unclear.

Preliminary evidence suggests that consumption of olive oil, rich in oleic acid, may decrease the risk of developing RA. One trial in which people with RA received either fish oil or olive oil, found that olive oil capsules providing 6.8 grams of oleic acid per day for 24 weeks produced modest clinical improvement and beneficial changes in immune

function. However, as there was no placebo group in that trial, the possibility of a placebo effect cannot be ruled out.

Fasting has been shown to improve both signs and symptoms of RA, but most people have relapsed after the returning to a standard diet. When fasting was followed by a 12-month vegetarian diet, however, the benefits of fasting appeared to persist. It is not known why the combination of these dietary programs (i.e., fasting followed by a vegetarian diet) might be helpful, and the clinical trial that investigated this combination[15] has been criticized both for its design and interpretation.

Food sensitivities develop when pieces of intact protein in food are able to cross through the intestinal barrier. Many patients with RA have been noted to have increased intestinal permeability, especially when experiencing symptoms, and RA has been linked to allergies and food sensitivities. In many people, RA worsens when they eat foods to which they are allergic or sensitive and improves by avoiding these foods. In one study, the vast majority of RA patients had elevated levels of antibodies to milk, wheat, or both, suggesting a high incidence of allergy to these substances. English researchers have reported that one-third of people with RA may be able to control their disease completely through allergy elimination. Identification and elimination of symptom-triggering foods should be done with the help of a physician.

Drinking four or more cups of coffee per day has been associated with an increased risk of developing rheumatoid arthritis in preliminary research.

Lifestyle changes that may be helpful

Although exercise may initially increase pain, gentle exercises help people with RA. Women with RA taking low-dose steroid therapy can safely participate in a weight-bearing exercise program with many positive effects on physical function, activity and fitness levels, and bone mineral density, and with no aggravation of disease activity. Many doctors recommend swimming, stretching, or walking to people with RA.

Nutritional supplements that may be helpful

People with RA have been reported to have an impaired antioxidant system, making them more susceptible to free radical damage. Vitamin E is an important antioxidant, protecting many tissues, including joints, against oxidative damage. Low vitamin E levels in the joint fluid of people with RA have been reported. In a double-blind trial, approximately 1,800 IU per day of vitamin E was found to reduce pain from RA. Two other double-blind trials (using similar high levels of vitamin E) reported that vitamin E had approximately the same effectiveness in reducing symptoms of RA as anti-inflammatory drugs. In other double-blind trials, 600 IU of vitamin E taken twice daily was significantly more effective than placebo in reducing RA, although laboratory measures of inflammation remained unchanged.

Oils containing the omega-6 fatty acid gamma linolenic acid (GLA)—borage oil, black currant seed oil, and evening primrose oil (EPO) —have been reported to be effective in the treatment for people with RA. Although the best effects have been reported with use of borage oil, that may be because more GLA was used in borage oil trials (1.1–2.8 grams per day) compared with trials using black currant seed oil or EPO. The results with EPO have been mixed and confusing, possibly because the placebo used in those trials (olive oil) may have anti-inflammatory activity. In a double-blind trial, positive results were seen when EPO was used in combination with fish oil. GLA appears to be effective

because it is converted in part to prostaglandin E1, a hormone-like substance known to have anti-inflammatory activity.

Many double-blind trials have proven that omega-3 fatty acids in fish oil, called EPA and DHA, partially relieve symptoms of RA. The effect results from the anti-inflammatory activity of fish oil. Many doctors recommend 3 grams per day of EPA and DHA, an amount commonly found in 10 grams of fish oil. Positive results can take three months to become evident. In contrast, a double-blind trial found flaxseed oil (source of another form of omega-3 fatty acid) not to be effective for RA patients.

Cetyl myristoleate (CMO) has been proposed to act as a joint "lubricant" and anti-inflammatory agent. In a double-blind trial, people with various types of arthritis that had failed to respond to nonsteroidal anti-inflammatory drugs received either CMO (540 mg per day orally for 30 days) or a placebo. These people also applied CMO or placebo topically, according to their perceived need. Sixty-four percent of those receiving CMO improved, compared with 14% of those receiving placebo. More research is needed to determine whether CMO has a legitimate place in the treatment options offered RA patients.

The use of dimethyl sulfoxide (DMSO) for therapeutic applications is controversial in part because some claims made by advocates appear to extend beyond current scientific evidence, and in part because topical use greatly increases the absorption of any substance that happens to be on the skin, including molecules that are toxic to the body. Nonetheless, there is some preliminary evidence that when applied to the skin, it has anti-inflammatory properties and alleviates pain, such as that associated with RA. DMSO appears to reduce pain by inhibiting the transmission of pain messages by nerves. It comes in different strengths and degrees of purity, and certain precautions must be taken when applying DMSO. For these reasons, DMSO should be used only under the supervision of a doctor.

Research suggests that people with RA may be partially deficient in pantothenic acid (vitamin B5). In one placebo-controlled trial, those with RA had less morning stiffness, disability, and pain when they took 2,000 mg of pantothenic acid per day for two months. Supplementation with New Zealand green-lipped mussel (Perna canaliculus) significantly improved RA symptoms in 68% of participants in a double-blind trial. Other studies have been carried out, some of which have confirmed these findings, while others have not. In a recent double-blind trial, use of green-lipped mussel as a lipid extract (210 mg per day) or a freeze-dried powder (1,150 mg per day) for three months led to a decrease in joint tenderness and morning stiffness, and to better overall function. However, members of the Australian Rheumatism Association have reported side effects, such as stomach upset, gout, and skin rashes, occurring in people taking certain New Zealand green-lipped mussel extracts. One case of hepatitis has been reported in association with the use of a New Zealand green-lipped mussel extract.

Deficient zinc levels have been reported in people with RA. Some trials have found that zinc reduced RA symptoms, but others have not. Some suggest that zinc might only help those who are zinc-deficient, and, although there is no universally accepted test for zinc deficiency, some doctors check white-blood-cell zinc levels.

People with RA have been found to have lower selenium levels than healthy people. One of two double-blind trials using at least 200 mcg of selenium per day for three to six

months found that selenium supplementation led to a significant reduction in pain and joint inflammation in RA patients, but the other reported no beneficial effect. More controlled trials are needed to determine whether selenium reduces symptoms in people with RA.

Copper acts as an anti-inflammatory agent needed to activate superoxide dismutase (SOD), an enzyme that protects joints from inflammation. People with RA tend toward copper deficiency and copper supplementation has been shown to increase SOD levels in humans. The Journal of the American Medical Association quoted one researcher as saying that while "Regular aspirin had 6% the anti-inflammatory activity of [cortisone] . . . copper [when added to aspirin] had 130% the activity [of cortisone]."

Several copper compounds have been used successfully in treating people with RA, and a controlled trial using copper bracelets reported surprisingly effective results compared with the effect of placebo bracelets. Under certain circumstances, however, copper can increase inflammation in rheumatoid joints. Moreover, the form of copper most consistently reported to be effective, copper aspirinate (a combination of copper and aspirin), is not readily available. Nonetheless, some doctors suggest a trial of 1–3 mg of copper per day for at least several months.

Boron supplementation at 3–9 mg per day may be beneficial, particularly in treating people with juvenile RA, according to very preliminary research. The benefit of using boron to treat people with RA remains unproven.

D-phenylalanine has been used with mixed results to treat chronic pain, including pain caused by RA. No research has evaluated the effectiveness of DL-phenylalanine, a related supplement, in treating people with RA. The effect of either form of phenylalanine in the treatment of people with RA remains unproven.

Many years ago, two researchers reported that some individuals with RA had inadequate stomach acid. Hydrochloric acid, called HCl by chemists, is known to help break down protein in the stomach before the protein can be absorbed in the intestines. Allergies generally occur when inadequately broken down protein is absorbed from the intestines. Therefore, some doctors believe that when stomach acid is low, supplementing with betaine HCl can reduce food-allergy reactions by helping to break down protein before it is absorbed. In theory such supplementation might help some people with RA, but no research has investigated whether betaine HCl actually reduces symptoms of RA.

Supplementation with betaine HCl should be limited to people who have a proven deficit in stomach acid production. Of doctors who prescribe betaine HCl, the amount used varies with the size of the meal and with the amount of protein ingested. Although typical amounts recommended by doctors range from 600 to 2,400 mg of betaine HCl per meal, use of betaine HCl needs to be monitored by a healthcare practitioner and tailored to the needs of the individual.

Bromelain has significant anti-inflammatory activity. Many years ago in a preliminary trial, people with RA who were given bromelain supplements experienced a decrease in joint swelling and improvement in joint mobility. The amount of bromelain used in that trial was 20–40 mg, three or four times per day, in the form of enteric-coated tablets. The authors provided no information about the strength of activity in the bromelain supplements that were used. (Today, better quality bromelain supplements are listed in

gelatine-dissolving units [GDU] or in milk-clotting units [MCU].) Enteric-coating protects bromelain from exposure to stomach acid. Most commercially available bromelain products today are not enteric-coated.

Propolis is the resinous substance collected by bees from the leaf buds and bark of trees, especially poplar and conifer trees. Anti-inflammatory effects from topical application of propolis extract have been noted in one animal study, and a preliminary controlled trial found that patients with RA treated with topical propolis extract (amount and duration not noted) had greater improvements in symptoms compared to placebo.

Herbs that may be helpful

Boswellia is an herb used in Ayurvedic medicine (the traditional medicine of India) to treat arthritis. Boswellia has reduced symptoms of RA in most reports. While some double-blind trials using boswellia have produced positive results, some equivocal results and negative findings have also been reported. In some trials where boswellia has appeared ineffective, though, patients have been allowed to continue use of nonsteroidal anti-inflammatory drugs (NSAIDs). Such use of NSAIDs can confound experimental results, because boswellia and NSAIDs work in a similar fashion to reduce inflammation. Some doctors suggest using 400–800 mg of gum resin extract in capsules or tablets three times per day.

A cream containing small amounts of capsaicin, a substance found in cayenne pepper, can help relieve pain when rubbed onto arthritic joints, according to the results of a double-blind trial. Capsaicin achieves this effect by depleting nerves of a pain-mediating neurotransmitter called substance P. Although application of capsaicin cream initially causes a burning feeling, the burning lessens with each application and disappears for most people in a few days. Creams containing 0.025–0.075% of capsaicin are available and may be applied to the affected joints three to five times a day. A doctor should supervise this treatment.

Devil's claw has anti-inflammatory and analgesic actions. Several open and double-blind trials have been conducted on the anti-arthritic effects of devil's claw. The results of these trials have been mixed, so it is unclear whether devil's claw lives up to its reputation in traditional herbal medicine as a remedy for people with RA. A typical amount used is 800 mg of encapsulated extracts three times per day or powder in the amount of 4.5–10 grams per day.

Turmeric is a yellow spice often used to make curry dishes. The active constituent, curcumin, is a potent anti-inflammatory compound that protects the body against free radical damage. A double-blind trial found curcumin to be an effective anti-inflammatory agent in RA patients. The amount of curcumin usually used is 400 mg three times per day.

Ginger is another Ayurvedic herb used to treat people with arthritis. A small number of case studies suggest that taking 6–50 grams of fresh or powdered ginger per day may reduce the symptoms of RA. A combination formula containing ginger, turmeric, boswellia, and ashwagandha has been shown in a double-blind trial to be slightly more effective than placebo for RA; the amounts of herbs used in this trial are not provided by the investigators.

The historic practice of applying nettle topically (with the intent of causing stings to relieve arthritis) has been assessed by a questionnaire study. The nettle stings were reported to be safe except for causing a sometimes painful, sometimes numbing rash lasting 6 to 24 hours. Further studies are required to determine whether this practice is therapeutically effective.

Yucca, a traditional remedy, is a desert plant that contains soap-like components known as saponins. Yucca tea (7 or 8 grams of the root simmered in a pint of water for 15 minutes) is often drunk for symptom relief three to five times per day. The effects of yucca in the treatment of people with RA has not been studied.

Burdock root has been used historically both internally and externally to treat painful joints. Its use in the treatment of people with RA remains unproven.

Although willow is slow acting as a pain reliever, the effect is thought to last longer than the effect of willow's synthetic cousin, aspirin. One double-blind trial found that willow bark combined with guaiac, sarsaparilla, black cohosh, and poplar (each tablet contained 100 mg of willow bark, 40 mg of guaiac, 35 mg of black cohosh, 25 mg of sarsaparilla, and 17 mg of poplar) relieved pain due to RA better than placebo over a two-month period. The exact amount of the herbal combination used in the trial is not given, however, and patients were allowed to continue their other pain medications. Clinical trials on willow alone for RA are lacking. Some experts suggest that willow may be taken one to four weeks before results are noted.

Topical applications of several botanical oils are approved by the German government for relieving symptoms of RA. These include primarily cajeput (Melaleuca leucodendra) oil, camphor oil, eucalyptus oil, fir (Abies alba and Picea abies) needle oil, pine (Pinus spp.) needle oil, and rosemary oil. A few drops of oil or more can be applied to painful joints several times a day as needed. Most of these topical applications are based on historical use and are lacking modern clinical trials to support their effectiveness in treating RA.

Preliminary studies conducted in India with the herb picrorhiza show a benefit for people with RA. Currently, this therapeutic effect remains weakly supported and therefore unproven.

South-western Native American and Hispanic herbalists have long recommended topical use of chaparral on joints affected by RA. The anti-inflammatory effects of chaparral found in test tube research suggests this practice might have value, though clinical trials have not yet investigated chaparral's usefulness in people with RA. Chaparral should not be used internally for this purpose.

Cat's claw has been used traditionally for RA, but no human trials have investigated this practice.

Meadowsweet was used historically for a wide variety of conditions, including treating rheumatic complaints of the joints and muscles.

In a preliminary trial, an extract of the Chinese herbal remedy Tripterygium wilfordii Hook F, in the amount of 360 to 570 mg per day for 16 weeks, produced improvement in symptoms and laboratory tests in eight of nine patients with rheumatoid arthritis.

However, one patient developed high blood pressure during the trial.[104] In a double-blind trial, an extract of this herb, given in the amount of 360 mg per day for 20 weeks was significantly more effective than a placebo at reducing disease activity. A lower amount (160 mg/day) was also more effective than the placebo, but the difference was not statistically significant. No serious side effects were reported.

Holistic approaches that may be helpful

The role of manipulation in managing RA has received little study. In one small controlled trial, patients with RA were found to have more tenderness at certain body locations compared to healthy people. Six minutes of gentle spinal manipulation decreased this tenderness temporarily in the spinal areas but not in areas around the knees or ankles. The effect of manipulation on the symptoms or progression of RA has not been investigated.

Seasonal Affective Disorder

Seasonal affective disorder (SAD) is an extreme form of common seasonal mood cycles, in which depression develops during the winter months.

How seasonal changes cause depression is unknown, but most of the research into mechanisms and treatment has focused on changes in levels of the brain chemicals melatonin and serotonin in response to changing lengths of exposure to light and darkness.

What are the symptoms of seasonal affective disorder?

SAD is characterized by typical symptoms of depression, such as sadness, hopelessness, and thoughts of suicide (in some cases), and "atypical" depressive symptoms such as excessive sleep, lethargy, carbohydrate cravings, overeating, and weight gain. The symptoms usually occur the same time of year, typically fall and winter, and disappear with the onset of spring and summer.

Dietary changes that may be helpful

Cravings for simple carbohydrates are increased in SAD, and women diagnosed with this form of winter depression have been found to eat more carbohydrates, both sweets and starches, than do healthy women. These women also report eating in response to emotionally difficult conditions, anxiety, depression, and loneliness more frequently than healthy women, but eating patterns associated with SAD are distinct from those of women with eating disorders.

People with SAD process sugar differently in winter compared with summer or after light therapy in winter. Changes in neurotransmitters that may affect cravings also occur in women with SAD. Because consumption of carbohydrates can influence neurotransmitter levels, some authorities have speculated that eating simple carbohydrates may be a form of self-medication in people with SAD. A review of the research on diet and mood found that, while eating simple carbohydrates in reaction to depressed mood does bring about a temporary lift in mood, other evidence suggests that long-term control of negative moods is, for some people, best achieved by eliminating simple carbohydrates from the diet. No research has yet been conducted, however, to evaluate the benefits of a diet low in simple carbohydrates (or any other dietary intervention) for people with SAD.

Lifestyle changes that may be helpful

Exercise can ease depression and improve well being, in some cases as effectively as antidepressant medications. One study found that both one hour of aerobic exercise three times per week and the same amount of anaerobic exercise were significantly and equally effective in reducing symptoms of depression. In a preliminary study of women with SAD, exercise while exposed to light was more likely to be associated with fewer seasonal depressive symptoms than was exercise performed with little light exposure. A controlled study of 120 indoor employees used relaxation training as the placebo in a study of fitness training, light exposure, and winter depressive symptoms. Fitness training was performed two to three times per week while exposed to either bright light (2,500–4,000 lux) or ordinary light (400–600 lux). Compared to relaxation, exercise in bright light improved general mental health, social functioning, depressive symptoms, and vitality, while exercise in ordinary light improved vitality only.

Nutritional supplements that may be helpful

L-tryptophan is the amino acid used by the body to manufacture serotonin. Several trials, some controlled, have shown that experimentally inducing a tryptophan deficiency in people with SAD who are in remission brings about a relapse of depressive symptoms. This suggests that supplemental L-tryptophan might be helpful in SAD. In small, preliminary trials, 4 to 6 grams of L-tryptophan given in divided amounts daily was as effective as light therapy and more effective than placebo. L-tryptophan may be of particular use in people with winter depression who do not benefit from light therapy. In a preliminary trial, people with SAD who responded only partially or not at all to bright light therapy were given 1,000 mg of L-tryptophan three times daily in addition to 10,000 lux light therapy for 30 minutes every morning. Sixty-four percent of them had significant improvement in depressive symptoms while receiving both L-tryptophan and bright light therapy. L-tryptophan is currently available by prescription only.

5-HTP is a substance related to L-tryptophan that increases serotonin production and has shown antidepressant activity. It may also be useful in the treatment of SAD, but there is currently no research testing this possibility.

Vitamin D is well known for its effects on helping to maintain normal calcium levels, but it also exerts influence on the brain, spinal cord, and hormone-producing tissues of the body that may be important in the regulation of mood. A double-blind controlled study found that mood improved in healthy people without SAD who received 400 or 800 IU per day of vitamin D for five days in late winter. However, no difference in vitamin D levels has been observed between people with seasonal depression and those without, and the antidepressant activity of light therapy has been shown to be independent of changes in levels of vitamin D. A large study of women found that supplementation with 400 IU per day of vitamin D had no impact on the incidence of winter depression. Any benefits of vitamin D on SAD remain unproven.

Depression can be one of the first symptoms of vitamin B12 deficiency. Vitamin B12, in the form of cyanocobalamin, given orally in the amount of 1,500 mcg three times daily to patients with seasonal depression, showed no superiority over placebo in a double-blind trial. Vitamin B12 cannot be recommended for the treatment of SAD.

Melatonin is a hormone produced in the body in response to the rhythms of light and darkness. Changes in melatonin levels are believed to be an important factor in seasonal depression. Supplementation with melatonin, however, has been ineffective

when taken at night or in the morning. Melatonin may even reverse the benefits of light therapy in people with SAD. A small, double-blind study, however, found that 125 mcg of melatonin taken both 8 and 12 hours after awakening was effective for reducing depression's symptoms.

Herbs that may be helpful

St. John's Wort, an herb well known for its antidepressant activity, has been examined for its effectiveness in treating SAD. In a preliminary trial, patients with seasonal depression were given 900 mg per day of St. John's Wort in addition to either bright light (3,000 lux for two hours) or a dim light (300 lux for two hours) placebo. Both groups had significant improvement in depressive symptoms, but there was no difference between the groups. The authors concluded that St. John's Wort was beneficial with or without bright light therapy, but a placebo effect from the herb cannot be ruled out in this study. Another preliminary study asked 301 SAD patients to report the changes in their symptoms resulting from the use of St. John's Wort at 300 mg three times daily. Significant overall improvement was reported by these patients. Some of the subjects used light therapy in addition to St. John's Wort. They reported more improvement in sleep, but overall improvement was not significantly different from those using St. John's Wort alone. Double-blind research is needed to confirm the usefulness of St. John's Wort for treating SAD.

Holistic approaches that may be helpful

Diminished sunlight exposure in winter contributes to changes in brain chemistry and plays a role in seasonal mood changes. Artificial lights have been widely used to increase light exposure during winter months. Many studies show the benefit of light therapy in the treatment of SAD. In a controlled trial, 96 patients with SAD were treated with light at 6,000 lux for 1.5 hours in either morning or evening, or with a sham negative ion generator, which was used as the placebo. After three weeks of treatment, morning light produced complete or near-complete remission for 61% of patients, while evening light helped 50%, and placebo helped 32%. Another study similarly found morning light to have more antidepressant activity than evening light for people with SAD. This study also found that patterns of melatonin production were altered in seasonal depression, and that morning light therapy shifted this pattern toward those of control subjects who did not have seasonal depression. Blood flow to certain regions of the brain was measured after light therapy and was increased in seasonal depression patients who benefited from the light therapy. The increase in regional brain blood flow did not occur in those patients who did not respond to the light therapy. Light therapy begun prior to the onset of winter depression appears to have a preventive effect in people susceptible to SAD.

A review of clinical trials of light therapy for SAD concluded that the intensity of the light is related to the effectiveness of the treatment. A higher response rate was seen in trials where light intensity was greater, compared with trials that used light therapy of lower intensity. Red and potentially harmful ultraviolet wavelengths are not necessary for a response to light therapy.

A study of the adverse side effects from high-intensity light therapy found them to be common, mild and brief. Among people who underwent brief treatment with 10,000 lux, 45% experienced side effects such as headaches and eye and vision changes. Described as mild and temporary, they did not interfere with treatment.

Dawn simulation is a form of light therapy involving gradually increasing bedside light in the morning. In a comparison study, dawn simulation using 100–300 lux for 60–90 minutes every morning improved symptoms of SAD similarly to bright light therapy using 1,500–2,500 lux for two hours every morning.

A negative ionizer is a device that emits negatively charged particles into the air. Negative air ionization may be useful in treating SAD. One double-blind trial compared the benefits of high-density negative ionization, providing 2.7 million ions per cubic centimetre, and low-density negative ionization, providing 10,000 ions per cubic centimetre, for people with SAD. Atypical depressive symptoms improved by 50% or more for 58% of patients receiving the high-density ionization for 30 minutes daily, while only 15% of those receiving low-density ionization had 50% or greater improvement. There were no side effects, and all of the patients who responded to the therapy relapsed when ionization was discontinued. In another controlled trial, high-density ionization was found equally as effective as light therapy, and both were significantly more effective than low-density ionization.

Sinus Congestion

Sinus congestion (also called nasal congestion or rhinitis) involves blockage of one or more of the four pairs of sinus passageways in the skull.

The blockage may result from inflammation and swelling of the nasal tissues, obstruction by one of the small bones of the nose (deviated septum), or from secretion of mucus. It may be acute or chronic. Acute sinus congestion is most often caused by the common cold. Sinus congestion caused by the common cold is not discussed here. Chronic sinus congestion often results from environmental irritants such as tobacco smoke, food allergens, inhaled allergens, or foreign bodies in the nose.

Sinus congestion leads to impaired flow of fluids in the sinuses, which predisposes people to bacterial infections that can cause sinusitis. At least two serious disorders have been associated with chronic nasal congestion: chronic lymphocytic leukaemia and HIV. For this reason, chronic nasal congestion lasting three months or more should be evaluated by a medical professional.

What are the symptoms of sinus congestion?

Sinus congestion typically causes symptoms of pressure, tenderness, or pain in the area above the eyebrows (frontal sinus) and above the upper, side teeth (maxillary sinus). Other symptoms include nasal stuffiness sometimes accompanied by a thick yellow or green discharge, postnasal drip, bad breath, and an irritating dry cough.

Dietary changes that may be helpful

Food allergy appears to play an important role in many cases of rhinitis, which is related to sinus congestion. In a study of children under one year of age with allergic rhinitis and/or asthma, 91% had a significant improvement in symptoms while following an allergy-elimination diet. In the experience of one group of doctors, food allergy was the most common cause of chronic rhinitis. Two other researchers have found food allergy to be a contributing factor to allergic rhinitis in 25% and 39% of cases, respectively. Food allergies are best identified by means of an allergy-elimination diet, which should be supervised by a doctor.

Lifestyle changes that may be helpful

The most common cause of nasal congestion is allergy to inhalants, such as pollen, moulds, dust mites, trees, or animal dander. Exposure to various chemicals in the home or workplace may also contribute to allergic rhinitis. Indoor and outdoor air pollution may also be a factor in susceptible people. Smoking and second-hand exposure to tobacco smoke have been implicated in chronic nasal congestion and the prevalence of chronic rhinitis among men has been shown to increase with increasing cigarette consumption. People exposed to chlorine, such as lifeguards and swimmers, may also be at risk of developing nasal congestion.

Careful evaluation by an allergist or other healthcare professional may help identify factors contributing to nasal congestion. Sometimes strict avoidance of the triggering agents (e.g., thoroughly vacuuming house dust or using dust covers on the mattresses) may provide relief. Where complete avoidance of irritants is not possible, desensitization techniques (immunotherapy [allergy shots]) may be helpful.

Nasal irrigation with warm water or saline may be helpful for reducing symptoms of sinus congestion, although steam inhalations appear to be less useful. In a study of people suffering from the common cold, steam inhalation did not improve sinus congestion any better than placebo. In a similar controlled study, irrigation of the nasal passages with heated water or saline, decreased nasal secretions, although inhalation of water vapour did not.

Herbs that may be helpful

Eucalyptus oil is often used in a steam inhalation to help clear nasal and sinus congestion. Eucalyptus oil is said to function in a fashion similar to that of menthol by acting on receptors in the nasal mucous membranes, leading to a reduction in the symptoms of nasal stuffiness.

Holistic approaches that may be helpful

Acupuncture may be useful for decreasing chronic sinus congestion. In one clinical study, most participants experienced at least temporary relief after acupuncture needles were inserted alongside the nose.

Skin Conditions

Skin, our largest organ, can radiate health or suggest the first signs of illness. Skin conditions can range from acne to wounds with varying degrees of symptoms and seriousness. It is important to carefully monitor changes in your skin, treat problems as soon as you notice them, and, if problems persist, see a physician.

If you don't see a condition you're looking for, visit the Health Concerns index.

Cradle Cap
Dermatitis
Duhring's Disease
Eczema
Hives
Psoriasis
Seborrheic Dermatitis
Skin Ulcer
Vitiligo
Wound Healing

Snoring

Snoring is caused by the movement of air across the soft tissues in the mouth or throat, such as the uvula, soft palate, and sometimes the vocal cords.

Any restriction of airflow, as occurs with nasal congestion, asthma, or polyps, increases the likelihood of snoring. Simple snoring is usually without health consequences, but inadequate sleep quality and quantity, night time dips in the body's oxygen levels, and headaches sometimes accompany snoring. In addition, an association between snoring and heart disease has been established. When the resistance to airflow in the airways becomes so great as to cause significant interruptions in breathing, it is known as sleep apnea. Sleep apnea represents a more serious health concern than simple snoring; therefore, chronic snoring, which can be associated with sleep apnea, should be evaluated by a healthcare provider.

What are the symptoms of snoring?

People with snoring may make a rough, rattling, noisy sound while breathing in during sleep.

Lifestyle changes that may be helpful

Allergies can inflame the nasal passages, sinuses, and airways of the lungs, and commonly cause or contribute to snoring. Data collected from people with allergic rhinitis (stuffy nose) and asthma show that these people are more likely to be snorers than are no allergic people. In addition, two preliminary studies have found that when snoring is treated using a continuous positive airway pressure device, an instrument primarily used to treat sleep apnea, night time asthma attacks decrease. Children who snore are also more likely than other children to have allergies, and one preliminary study found that more than half of children with allergies are snorers. One researcher reported that children with allergy symptoms, including snoring, commonly have food sensitivities. Although little more is known about food sensitivities and snoring, it may be helpful to test for food sensitivities. The possibility of asthma and allergies should therefore be considered in people who snore.

A number of studies have found an association between snoring and heart disease. High blood pressure and coronary artery disease have been correlated with snoring in both men and women, and the correlation is stronger in people with normal weight. In women, snoring is more common after menopause, and is strongly associated with high blood pressure in women around the age of menopause. Researchers suggest that, with such a strong correlation, it is important to screen for hypertension and heart disease in people who snore.

Obesity and lack of physical activity are commonly associated with heavy snoring. Even in children, obesity may be linked to snoring and sleep disorders. One study found that obese men who snore were significantly more likely to develop diabetes over a ten-year period than were obese men who did not snore. Snoring is clearly a problem that should be addressed in obese men, and increasing physical activity and weight loss are widely recommended. A preliminary trial found that weight loss was more important in reducing snoring than either changes in sleep position or use of a nasal decongestant spray. In a report by the U.S. Army, weight control and physical training was advised to reduce the severity of snoring and sleep apnea, and in one presented case, full recovery from severe snoring was achieved with weight loss and use of a continuous positive airway pressure device. Two other cases have been reported in which combined weight loss and use of a continuous positive airway pressure device resulted in full recovery from snoring and sleep apnea.

Smoking increases the likelihood of snoring because of its effects on the nasal passages and sinuses. In addition, nicotine may cause sleep disturbances that result in more snoring. Men are more likely to snore as they age, but one study found that smoking increases the likelihood of snoring particularly in men under the age of 60. A sleep study found that heavy smokers are more likely to snore than are moderate and light smokers, and that people who have quit smoking are no more likely to snore than are people who have never smoked. Teenagers who smoke have also been found to be more likely to snore than non-smoking teenagers, and that snoring was associated with frequent night time wakening and daytime sleepiness. Exposure to environmental smoke, or “second-hand smoke,” has been shown to increase the likelihood of snoring in children. Smoking cessation and elimination of environmental smoke exposure are therefore important in the treatment of snoring.

It has long been thought that consumption of alcohol contributes to snoring, and at least one study has found this to be true, but several studies have been unable to verify this link.

Sprains and Strains

Sprains and strains are types of minor injuries to the soft tissues and connective tissues of the musculoskeletal system. Sprains usually refer to injuries to ligaments, but sometimes to other connective tissues, such as tendons and the capsules surrounding joints. Strains usually refer to injuries to muscles or to the areas where muscles become tendons.

Sprains and strains may occur together, and occasionally are quite severe, requiring immobilization of the body part in a rigid cast for weeks, long-term rehabilitation programs, and sometimes surgery.

What are the symptoms of sprains and strains?

The most common type of sprain is the ankle sprain. Ankle sprains have differing degrees of severity. Mild or minimal sprains with no tear of the ligament usually produce mild tenderness and some swelling. Moderate sprains, in which the ligament has been partially ruptured, produce obvious swelling, bruising, significant tenderness, and difficulty walking. Severe sprains, as when the ligament is completely torn from the bone

(called avulsion), make walking impossible and produce marked swelling, internal bleeding and joint instability.

Symptoms of strains include muscle soreness, muscle spasm, pain, and possibly swelling or warmth over the involved muscle.

Dietary changes that may be helpful

Adequate amounts of calories and protein are required for the body to repair damaged connective tissue. While major injuries requiring hospitalization raise protein and calorie requirements significantly, minor sprains and strains do not require changes from a typical, healthful diet.

Nutritional supplements that may be helpful

Proteolytic enzymes, including bromelain, papain, trypsin, and chymotrypsin, may be helpful in healing minor injuries such as sprains and strains because they have anti-inflammatory activity and appear to promote tissue healing.

Several preliminary trials have reported reduced pain and swelling, and/or faster healing in people with a variety of conditions using either bromelain, papain from papaya, or a combination of trypsin and chymotrypsin. Double-blind trials have reported faster recovery from athletic injuries, including sprains and strains, and earlier return to activity using eight tablets daily of trypsin/chymotrypsin, four to eight tablets daily of papain, eight tablets of bromelain (single-blind only), or a combination of these enzymes. However, one double-blind trial using eight tablets per day of trypsin/chymotrypsin to treat sprained ankles found no significant effect on swelling, bruising, or overall function.

Bromelain is measured in MCUs (milk clotting units) or GDUs (gelatin dissolving units). One GDU equals 1.5 MCU. Strong products contain at least 2,000 MCU (1,333 GDU) per gram (1,000 mg). A supplement containing 500 mg labelled “2,000 MCU per gram” would have 1,000 MCU of activity, because 500 mg is half a gram. Some doctors recommend 3,000 MCU taken three times per day for several days, followed by 2,000 MCU three times per day. Some of the research, however, uses smaller amounts, such as 2,000 MCU taken in divided amounts in the course of a day (500 MCU taken four times per day). Other enzyme preparations, such as trypsin/chymotrypsin, have different measuring units. Recommended use is typically two tablets four times per day on an empty stomach, but as with bromelain, the strength of trypsin/chymotrypsin tablets can vary significantly from product to product.

One controlled trial showed that people who supplement with 3 grams per day L-carnitine for three weeks before engaging in an exercise regimen are less likely to experience muscle soreness.

Antioxidant supplements, including vitamin C and vitamin E, may help prevent exercise-related muscle injuries by neutralizing free radicals produced during strenuous activities. Controlled research, some of it double-blind, has shown that 400–3,000 mg per day of vitamin C may reduce pain and speed up muscle strength recovery after intense exercise. Reductions in blood indicators of muscle damage and free radical activity have also been reported for supplementation with 400–1,200 IU per day of vitamin E in most studies, but no measurable benefits in exercise recovery have been reported. A combination of 90 mg per day of coenzyme Q10 and a very small amount of vitamin E did not produce any protective effects in one double-blind trial.

Vitamin C is needed to make collagen, the “glue” that strengthens connective tissue. Injury, at least when severe, appears to increase vitamin C requirements, and vitamin C deficiency causes delayed healing from injury. Preliminary human studies have suggested that vitamin C supplementation in non-deficient people can speed healing of various types of trauma, including musculoskeletal injuries, but double-blind research has not confirmed these effects for athletic injuries, which included sprains and strains.

Zinc is a component of many enzymes, including some that are needed to repair wounds. Even a mild deficiency of zinc can interfere with optimal recovery from everyday tissue damage as well as from more serious trauma. Trace minerals, such as manganese, copper, and silicon are also known to be important in the biochemistry of tissue healing. However, there have been no controlled studies of people with sprains or strains to explore the effect of deficiency of these minerals, or of oral supplementation, on the rate of healing.

Many vitamins and minerals have essential roles in tissue repair, and deficiencies of one or more of these nutrients have been demonstrated in animal studies to impair the healing process. This could argue for the use of multiple vitamin-mineral supplements by people with minor injuries who might have deficiencies due to poor diets or other problems, but controlled human research is lacking to support this.

Glucosamine sulphate and chondroitin sulphate may both play a role in wound healing by providing the raw material needed by the body to manufacture molecules called glycosaminoglycans found in skin, tendons, ligaments, and joints. Test tube and animal studies have found that these substances, and others like them, can promote improved tissue healing. Injectable forms of chondroitin sulphate have been used in Europe for various types of sports-related injuries to tendons and joints, and one preliminary trial reported reduced pain and good healing in young athletes with chondromalacia patella (cartilage softening in the knee) who were given 750–1,500 mg per day of oral glucosamine sulphate. However, specific human trials of glucosamine and chondroitin sulphate for healing sprains and strains are lacking.

The use of DMSO, a colourless, oily liquid primarily used as an industrial solvent, for therapeutic applications is controversial. However, some evidence indicates that dilutions, when applied directly to the skin, have anti-inflammatory properties and inhibit the transmission of pain messages by nerves, and in this way might ease the pain of minor injuries such as sprains and strains. However no controlled research exists to confirm these effects in sprains and strains. DMSO comes in different strengths and different degrees of purity. In addition, certain precautions must be taken when applying DMSO. For those reasons, DMSO should be used only with the supervision of a doctor.

Tooth Decay

Tooth decay is the gradual breakdown of the tooth, beginning with the enamel surface and eventually progressing to the inner pulp.

Tooth decay is caused by acids produced by certain mouth bacteria in dental plaque. Factors that affect this process include oral hygiene, diet, meal frequency, saliva production, and heredity. Teeth with significant decay are said to have caries, or cavities.

What are the symptoms of tooth decay?

People with tooth decay may have tooth pain, including sensitivity to cold food and drinks.

Dietary changes that may be helpful

It has been noted for over 50 years that the incidence of tooth decay is low in people of traditional rural societies, such as Eskimos and African Bantus. However, However, the incidence of cavities increases as their diets begin to include more “westernized” processed foods. Although many different factors have been implicated in this observation, including refined flours, inactivation of vitamins by heating foods, and sugar intake, no single agent has been found responsible. Nevertheless, a diet high in whole grains and low in processed foods is a healthful choice that probably helps defend against tooth decay.

Sugar, especially sucrose (table sugar), appears to be required by the oral bacteria for the production of tooth decay. This finding has caused sugar to be widely blamed in the popular press as the primary cause of dental caries. However, caries incidence has recently declined in a time of increasing sugar intake. This has led to a re-evaluation of caries causation, and sugar is now understood to be only one of the factors in the development of tooth decay. Nearly as important as the total amount of sugar intake seems to be the consistency of the sugary foods and the length of time they are in contact with the teeth. Dry and sticky foods tend to stay in contact longer, causing more plaque formation. Still, reduction of total dietary sugar is probably the most accepted dietary recommendation for the prevention of dental caries.

Certain sugar substitutes appear to have anti-caries benefits beyond that of reducing sugar intake. Xylitol is not fermented by the oral bacteria, and it inhibits bacterial growth. Sorbitol is only slowly used by oral bacteria, and it produces less caries than does sucrose. Children chewing gum containing either xylitol or sorbitol for five minutes five times daily for two years had large reductions in caries risk compared with those not chewing gum. Xylitol gum was associated with a slightly greater risk reduction than sorbitol gum. A double-blind study found 100% xylitol gum was superior to gum containing lesser amounts or no xylitol. Another study found xylitol-containing gums gave long-term protection against caries while sorbitol-only gum did not. Other research has confirmed the anti-caries benefits of xylitol in various forms, including gum, chewable lozenges, toothpastes, mouthwashes, and syrups.

Drinking fluoridated water (1 mg fluoride per litre) has led to an estimated 40 to 60% reduction in dental caries in many cities in the United States and worldwide. While most experts believe water fluoridation to be associated with minimal risk, others disagree. A minority of scientists believes fluoridation to be associated with an unacceptable risk of skeletal damage, including osteoporotic fractures and bone tumours, in exchange for a modest dental benefit. Fluoride has topical action as well as whole-body effects, suggesting that those who do not have access to fluoridated water can achieve some benefit with fluoride-containing toothpastes and mouthwashes. In areas without fluoridated water, a number of controlled trials have found oral use of chewable fluoride tablets (1 to 2 mg per day of fluoride) or fluoride mouth rinses (0.05% to 0.2% fluoride content) also reduce caries risk in children. Fluoride tablets and mouthwash have been found to be effective for caries prevention in young adults and the elderly. Tablets are slightly more effective than a mouth rinse for caries protection. These products should

not be used by young children (under three years of age), who might accidentally swallow dangerous amounts of fluoride. The American Dental Association (ADA) recommends supplementing children in areas without fluoridated water with liquid fluoride drops, but this should be done with the guidance of a dentist.

Lifestyle changes that may be helpful

The ADA recommends regular tooth brushing—daily brushing, ideally after each meal. Although thorough brushing varies from person to person, five to ten strokes in each area should be adequate. Toothpastes containing 1,000 to 2,500 ppm (1 to 2.5 mg per gram) of fluoride have been shown to reduce caries risk.

A recent population survey found blood lead levels were associated with the amount of dental caries in children and adults. The authors estimated that lead exposure is responsible for roughly 10% of dental caries in young Americans. For this and other health reasons, known and potential sources of lead exposure should be avoided. Common sources of lead exposure may include paint, foods grown near roadways, and water from lead pipes.

Nutritional supplements that may be helpful

Test tube studies show that vitamin B6 increases growth of beneficial mouth bacteria and decreases growth of cavity-causing bacteria. A double-blind study found that pregnant women who supplemented with 20 mg per day of vitamin B6 had significantly fewer new caries and fillings during pregnancy. Lozenges containing vitamin B6 were more effective than capsules in this study, suggesting an important topical effect. Another double-blind study gave children oral lozenges containing 3 mg of vitamin B6 three times per day for eight months, but reported only insignificant reductions in new cavities.

In a double-blind study of children aged 1 to 6 years, supplementation with Lactobacillus GG five days a week in milk for seven months reduced the incidence of cavities by 49%, compared with un-supplemented milk. The amount of Lactobacillus added to the milk was 5 to 10 x 10e5 CFU per ml.

One older controlled trial found that children given 3 teaspoons of cod liver oil per day (containing roughly 800 IU of vitamin D) for an entire school year had over 50% fewer new cavities. These promising results have not been followed up with modern placebo-controlled trials.

Levels of strontium in the water supply have been shown to correlate with the risk of dental caries in communities with similar fluoride levels. Compared with children with fewer cavities, enamel samples from children with high numbers of caries have been found to contain significantly less strontium. However, supplementation with strontium has not yet been studied as tooth decay prevention.

Herbs that may be helpful

Compounds present in both green tea and black tea have been shown to inhibit the growth and activity of bacteria associated with tooth decay. Animals given tea compounds in their drinking water develop fewer dental caries than do those drinking plain water. Human volunteers rinsing with an alcohol extract of tea leaves before bed each night for four days had significantly less plaque formation but similar amounts of

plaque-causing bacteria compared with those with no treatment. Tea drinking has not yet been tested as a tooth decay preventative in humans.

Varicose Veins

Varicose veins are twisted, enlarged veins close to the surface. They can occur almost anywhere but most commonly occur in the oesophagus and the legs.

Veins, which return blood to the heart, contain valves that keep blood from flowing backward as a result of gravity. When these valves become weak, blood pools in the veins of the legs and causes them to bulge. These enlarged vessels are called varicose veins. Standing and sitting for long periods of time, lack of exercise, obesity, and pregnancy all tend to promote the formation of varicose veins. Sometimes varicose veins are painful, but elevating the affected leg usually brings significant relief.

What are the symptoms of varicose veins?

Symptoms of varicose veins may include a dull pain, itch, or heavy sensation in the legs. The sensation is worse after prolonged standing and better when the legs are elevated. Varicose veins typically appear on the legs as dilated, tortuous veins close to the surface of the skin, and may look blue. Advanced varicose veins may cause ankle and leg swelling or skin ulcers.

Lifestyle changes that may be helpful

Keeping the legs elevated relieves pain. People with varicose veins should avoid sitting or standing for prolonged periods of time and should walk regularly.

Nutritional supplements that may be helpful

A controlled clinical trial found that oral supplementation with hydroxyethylrutosides (HR), a type of flavonoid that is derived from rutin, improved varicose veins in a group of pregnant women. Further research is needed to confirm the benefits observed in this preliminary trial. A typical amount of HR is 1000 mg per day.

A small, preliminary trial found that supplementation with 150 mg of proanthocyanidins per day improved the function of leg veins after a single application in people with widespread varicose veins.[2] Double-blind trials are needed to determine whether extended use of proanthocyanidins can substantially improve this condition.

Herbs that may be helpful

Although witch hazel is known primarily for treating haemorrhoids, it may also be useful for varicose veins. Topical use of witch hazel to treat venous conditions is approved by the German Commission E, authorities on herbal medicine. Application of a witch hazel ointment three or more times per day for two or more weeks is necessary before results can be expected.

Horse chestnut seed extract can be taken orally or used as an external application for disorders of venous circulation, including varicose veins. Preliminary studies in humans have shown that 300 mg three times per day of a standardized extract of horse chestnut seed reduced the formation of enzymes thought to cause varicose veins. Topical gel or creams containing 2% aescin can be applied topically three or four time per day to the affected limb(s).

Oral supplementation with butcher's broom or gotu kola may also be helpful for varicose veins.

Vertigo

Vertigo is a sensation of irregular or whirling motion, either of oneself or of external objects.

The word is sometimes incorrectly used as a general term to describe dizziness. The most common form of vertigo is benign positional paroxysmal vertigo (BPPV), in which brief attacks are brought on by certain changes in head position. BPPV may be due to a previous head injury, viral infection, and certain drug therapies, although in about half the cases the cause is unknown. BPPV tends to resolve without treatment within weeks to months, but may persist for years in some cases.

People experiencing vertigo should have a complete medical evaluation to determine the cause. Common causes of non-BPPV vertigo include conditions in which there is decreased blood flow to certain areas of the brain, Ménière's disease, and infection of the inner ear. Vertigo may also be a symptom of numerous other conditions, including sinusitis, panic attacks, migraine headaches, and problems with metabolism, such as hypothyroidism, high blood triglycerides, diabetes, and hypoglycaemia.

What are the symptoms of vertigo?

People with vertigo may have sudden sensations of spinning or whirling motion that may be accompanied by light-headedness and loss of balance, and less often by sweating, fatigue, nausea, and vomiting.

Dietary changes that may be helpful

In preliminary studies, vertigo associated with high triglycerides, diabetes mellitus, and hypoglycaemia responded to dietary management of the underlying disorder. In a preliminary study of people with migraine headaches, most of whom (83%) also experienced vertigo, a multifaceted approach including dietary changes was investigated. Dietary changes involved the elimination of foods and food additives suspected of causing migraine attacks. This approach resulted in complete or substantial improvement of symptoms in a significant number of participants. No other research has investigated the effects of diet on vertigo.

Lifestyle changes that may be helpful

Head positions that bring on sudden, acute attacks of vertigo, particularly bending the neck back while looking up, should be avoided. In one report, for example, the head position used in salons for shampooing hair was associated with the onset of vertigo. According to one authority, certain chronic or repetitive body positions may produce painful nodules, called trigger points, in the muscles of the head and neck, which can lead to dizziness and possibly vertigo. These positions include forward bending of the neck as when sleeping on two pillows, backward neck bending as when painting a ceiling, and turning the neck to one side as in some reading positions. A healthcare practitioner knowledgeable in postural education can give advice on avoiding such positions. Trigger point therapy is discussed below in "Other integrative approaches that may be helpful."

Nutritional supplements that may be helpful

A preliminary trial showed that 15 mg per day of vinpocetine had a moderate or greater effect on reducing the signs and symptoms of vertigo in 77% of patients with this condition. Other preliminary reports exist describing benefits of vinpocetine for vertigo and other symptoms of inner ear disorders, but controlled research is needed to evaluate these claims.

Two preliminary human studies reported that vitamin B6 supplementation reduced symptoms of vertigo produced with drugs in a laboratory setting. Vitamin B6 supplementation has not been studied in BPPV or other forms of vertigo and may not share the same causative mechanism as experimentally induced vertigo.

Herbs that may be helpful

In a preliminary clinical trial, a standardized extract of Ginkgo Biloba (GBE) significantly reduced symptoms of vertigo in a group of elderly people with mild cognitive impairment. Participants were given 40 mg three times per day for one year. GBE has also been reported to significantly reduce vertigo of unknown cause in preliminary and double-blind trials. The amounts given were 120 mg and 160 mg per day, respectively, for three months.

One gram of powdered ginger (Zingiber officinale) root in a single application has been reported to significantly reduce symptoms of artificially induced vertigo in one double-blind trial. In a double-blind trial, 1 gram of powdered ginger root was found to have very little effect in reducing vertigo related to seasickness.

Other integrative approaches that may be helpful

Numerous preliminary reports suggest certain “vestibular rehabilitation” exercises may help some cases of vertigo. These exercises were also found to be effective in relieving vertigo in two controlled studies, including one on BPPV. While vestibular rehabilitation exercises may be done at home, initial guidance by a qualified practitioner is necessary.

BPPV appears to be caused by an accumulation of free-floating cell fragments in the fluid of the inner ear. Certain manipulation therapy manoeuvres, referred to as particle repositioning manoeuvres (PRMs), are intended to relocate this debris to a harmless location, in order to improve symptoms. Both preliminary and controlled trials achieved significant improvement in, or elimination of, BPPV using these manoeuvres. Most studies report that over 90% of people with BPPV treated one or two times with PRM respond to this treatment, although up to 45% may develop BPPV again within a few years, requiring further treatments.

Research indicates some cases of vertigo are related to spinal disorders affecting the head and neck. Preliminary studies report that certain treatments, such as manipulation, physical therapy, and combined approaches including manipulation and specific exercise programs, result in significant improvement of vertigo symptoms.

Trigger points are thought by most, though not all, authorities to potentially cause pain and abnormal function in other parts of the body. Trigger points appear to develop as the result of injury, poor posture, structural abnormalities of the leg or pelvis, emotional tension, and other body stressors. Also known as myofascial pain dysfunction (MPD), this condition, when it affects certain muscles of the head and neck, has been associated with vertigo in preliminary research. Musculoskeletal healthcare specialists

and other practitioners can often treat MPD with a variety of natural therapies, including deep pressure massage, transcutaneous electrical nerve stimulation (TENS), and other approaches, but no controlled studies have investigated the effectiveness of these treatments specifically for vertigo.

In a preliminary study of people with migraine headaches, most of whom (83%) also experienced vertigo, a combined and individualized approach using dietary changes, medication, physical therapy, lifestyle changes, and acupuncture resulted in complete or substantial improvement of symptoms in a significant number of participants. In addition, a large number of case studies presented in two preliminary reports suggest acupuncture may help to reduce symptoms of vertigo. These preliminary studies have yet to be confirmed by controlled clinical trials.

Warts

Warts are a common abnormal skin growths caused by one of many types of human papilloma virus, which infects the outer layer of skin.

Common warts (verruca vulgaris) can appear on any part of the body but are more common on the fingers, hands, and arms. They are most common in people 30 years old or younger, but can occur at any age and are almost universal in the population. Other types of warts also exist, including flat warts, genital warts, laryngeal papillomas, and others.

What are the symptoms of warts?

Appearance and size of warts depend on the location and the amount of irritation and trauma. Common warts are sharply demarcated, rough-surfaced, round or irregular in shape, firm, and either light grey, yellow, brown, or grey-black in colour. They are small nodules ranging in size from 2–10 mm in diameter. Plantar warts (on the bottoms of the feet) are flattened and may be exquisitely tender. Flat warts, more common in children and young adults, are smooth, flat-topped yellow-brown elevations, most often seen on the face and along scratch marks. Genital warts (also called condyloma acuminata or venereal warts) are soft, moist, small pink or grey polyps that enlarge and are usually found in clusters on the anus and the warmer, moister areas of the female and male genitalia. Genital warts caused by HPV are considered a major cause of cervical dysplasia and cervical cancer. All warts are contagious.

Dietary changes that may be helpful

A preliminary study reported that the weekly consumption of two to four alcoholic drinks nearly doubled the risk of developing genital warts. Those who consumed more than five alcoholic drinks had a more than doubled risk of developing genital warts. A case report of a 19-year-old with a urinary-tract wart found that abstinence from a high intake of pork led to a regression of the wart.

Lifestyle changes that may be helpful

Warts can be spread by contact, and the transmission can occur between two people as well as between different parts of the body of the same person. To prevent the spread of the virus, warts should not be scratched. Genital warts are spread by sexual contact.
A study of HIV-infected and HIV-negative women found that current smokers were over five times more likely to develop genital warts than non-smokers.

Nutritional supplements that may be helpful

In a double-blind study, supplementation with oral zinc, in the form of zinc sulphate, for two months resulted in complete disappearance of warts in 87% of people treated, whereas none of those receiving a placebo improved. The amount of zinc used was based on body weight, with a maximum of 135 mg per day. These large amounts of zinc should be used under the supervision of a doctor. Side effects included nausea, vomiting, and mild abdominal pain.

Herbs that may be helpful

In a preliminary trial, topical application of garlic cloves was used successfully to treat warts in a group of children. A clove was cut in half each night and the flat edge of the clove was rubbed onto each of the warts, carefully cleaning the surrounding areas, so as not to spread any garlic juice. The areas were covered overnight with Band-Aids or waterproof tape and were washed in the morning. In all cases, the warts cleared completely after an average of nine weeks.

Herbalists have sometimes recommended the use of greater celandine (Chelidonium majus) for the topical treatment of warts. The milky juice from the fresh plant is typically applied to the wart once daily and allowed to dry.

Holistic approaches that may be helpful

Distant healing is a conscious, dedicated act of mental activity that attempts to benefit another person's physical or emotional well-being at a distance. A controlled study found that distant healing by an experienced healer for six weeks had no effect on the number or size of warts.

A controlled study found that the application of 122ºF heat from a heat pad for 30 seconds led to regression in 25 warts.[8] After 15 weeks, none of the regressed warts had re-grown.

Hypnosis is a widely recognized treatment for warts. One controlled trial found that twice-weekly hypnosis sessions resulted in greater wart disappearance than did medication, placebo, or no treatment after six weeks of therapy.

Weight Loss and Obesity

About two-thirds of the adult U.S. population is overweight. Almost one-third not only exceeds ideal weight, but also meets the clinical criteria for obesity. In the 1990s, rates of obesity more than doubled, and are currently rising by over 5% per year. Excess body weight is implicated as a risk factor for many different disorders, including heart disease, diabetes, several cancers (such as breast cancer in postmenopausal women, and cancers of the uterus, colon, and kidney), prostate enlargement (BPH), female infertility, uterine fibroids, and gallstones, as well as several disorders of pregnancy, including gestational diabetes, preeclampsia, and gestational hypertension. The location of excess body fat may affect the amount of health risk associated with overweight. Increased abdominal fat, which can be estimated by waist size, may be especially hazardous to long-term health.

For overweight women, weight loss can significantly improve physical health. A four-year study of over 40,000 women found that weight loss in overweight women was associated with improved physical function and vitality as well as decreased bodily pain. The risk of

death from all causes, cardiovascular disease, cancer, or other diseases increases in overweight men and women in all age groups. Losing weight and keeping it off is, unfortunately, very difficult for most people. However, repeated weight loss followed by weight regain may be unhealthy, as it has been associated with increased heart disease risk factors and bone loss in some studies. Rather than focusing on weight loss as the most important health outcome of a change in diet or lifestyle, some doctors advocate paying more attention to overall fitness and reduction in known risk factors for heart disease and other health hazards.

Excess body mass has the one advantage of increasing bone mass—a protection against osteoporosis. Probably because of this, researchers have been able to show that people who successfully lose weight have greater loss of bone compared with those who do not lose weight. People who lose weight should, therefore, pay more attention to preventing osteoporosis.

Dietary changes that may be helpful

Breast-feeding

In a preliminary study, breast-feeding during infancy was associated with a reduced risk of developing obesity during early childhood (ages three to four years).

In a preliminary study, overweight individuals who adhered to a very-low-carbohydrate diet (25 grams per day initially, increased to 50 grams per day after a certain weight-loss target was achieved), with no limit on total calorie intake, lost on average more than 10% of their body weight over a six-month period. . The participants also engaged in aerobic exercise at least three times a week, so it is not clear how much of the weight loss was due to the diet. Blood tests taken during the study suggested that the low-carbohydrate diet induced a condition called mild metabolic acidosis, indicating that long-term consumption of this diet may not be entirely safe. Individuals wishing to consume a very-low-carbohydrate diet for weight loss or for other reasons should be monitored by a doctor.

Calorie restriction

Calories in the diet come from fat, carbohydrate, protein, or alcohol. Weight-loss diets are typically designed to limit calories either by restricting certain foods that are thought to result in increased calorie intake, and/or by emphasizing foods that are believed to result in reduced calorie intake. Some currently popular diets restrict fat while emphasizing fibre and a balanced intake of healthful foods. Others restrict carbohydrates, either to extremely low amounts as in the Atkins diet, or to a lesser degree, emphasizing foods low in the glycemic index or high in protein. Discussions of the research on these diets follow; however, it should be remembered that no diet has been proven effective for long-term weight loss, and many people find it difficult to stay on most diets.

Low-fat, low-calorie, high-fibre, balanced diets are recommended by many doctors for weight loss. According to controlled studies, when people are allowed to eat as much food as they desire on a low-fat diet, they tend to lose more weight than people eating a regular diet. However, low-fat diets have not been shown to be more effective than other weight-loss diets that restrict calories. Nonetheless, a low-fat, high-fibre, balanced diet has additional potential benefits, such as reducing the risk of chronic diseases including heart disease and cancer.

Preliminary research indicates that people who successfully lost weight got less of their total calories from fat and more of them from protein foods. They also ate fewer snacks of low nutritional quality and got more of their calories from “hot meals of good quality.” Other preliminary studies find that dieters who maintain long-term weight loss report using fat restriction and eating a regular breakfast as key strategies in their success.

Low-carbohydrate, high-protein diets

Low-carbohydrate, high-fat diets such as the Atkins diet are very popular among people trying to lose weight. In a preliminary study, overweight individuals who adhered to a very-low-carbohydrate diet (25 grams per day initially, increased to 50 grams per day after a certain weight loss target was achieved), with no limit on total calorie intake, lost on average more than 10% of their body weight over a six-month period. The participants also engaged in aerobic exercise at least three times a week, so it is not clear how much of the weight loss was due to the diet. An analysis of other preliminary studies of this type of diet concluded that its effectiveness is primarily due to reduced calorie intake. Recently, three controlled trials found people using low-carbohydrate, high-fat diets lost more weight in six months than those using diets low in fat and calories. However, 20 to 40% of these dieters did not stay on their diets, and were not counted in the results. In addition, one of these trials continued for an additional six months, at the end of which there was no longer a significant difference in weight loss between the two diet groups. A recent 12-week controlled trial found that overweight adolescents also lost more weight with a low-carbohydrate diet than with a low-fat diet, even though they consumed 50% more calories than did the children on the low-fat diet. That study suggests that the weight loss occurring on the Atkins diet is not due entirely to calorie restriction. Blood tests suggest that low-carbohydrate diets induce a condition called mild metabolic acidosis, which might increase the risk of osteoporosis and kidney stones.

The effect of low-carbohydrate diets on cardiovascular risk is also an unresolved issue. The short-term studies discussed above found that blood cholesterol levels did not worsen with these diets. Other heart-disease risk factors (triglyceride levels and insulin sensitivity) actually improved with a low-carbohydrate diet. Some studies, however, have shown a worsening of certain cardiovascular risk factors in people using a low-carbohydrate, high-fat diet for up to one year. Adverse changes included increases in blood levels of homocysteine, lipoprotein(a), and fibrinogen, and a decrease in blood flow to the heart. Individuals wishing to consume a very-low-carbohydrate diet for weight loss or for other reasons should be monitored by a doctor.

Some research has investigated weight-loss diets that are high in protein, but moderate in fat and not as low in carbohydrate content as the diets discussed above. While this type of diet does not usually lead to greater weight loss than other diets when calorie intakes are kept equal, one controlled trial found greater body fat loss in women eating a diet almost equal in calories and fat but approximately twice as high in protein and lower in carbohydrate compared with a control group’s diet. Another controlled trial compared two diets similar in fat content but different in protein and carbohydrate content. People allowed to eat freely from the higher protein diet (25% of calories from protein, 45% calories from carbohydrate) consumed fewer calories and lost more weight compared with people eating the lower protein diet (12% of calories from protein, 59% calories from carbohydrate).

Low glycemic index foods

Diets that emphasize choosing foods with a low glycemic index have been show to help control appetite in some, though not all, controlled studies. A controlled study in two phases found no difference in weight loss between a low and a high glycemic index diet in the first 12-week phase, but when the diets were switched for a second 12-week phase, the low glycemic index diet was significantly more effective for weight loss. A preliminary study reported that obese children using a low glycemic index diet lost more weight compared with a similar group using a low-fat diet.

Fibre

Adequate amounts of dietary fibre are believed to be important for people wishing to lose weight. Fibre adds bulk to the diet and tends to produce a sense of fullness, helping people consume fewer calories. While research on the effect of fibre intake on weight loss has not produced consistent results, a recent review of weight-loss trials that did not restrict calories concluded that higher fibre diets improved weight-loss results, especially in people who were overweight.

Stabilizing food sensitivities

Although the relationship between food sensitivities and body weight remains uncertain, according to one researcher, chronic food allergy may lead to overeating and obesity.[47]

Long-term changes

People who go on and off diets frequently complain that it takes fewer calories to produce weight gain with each weight fluctuation. Evidence now clearly demonstrates that the body gets "stingier" in its use of calories after each diet. This means it becomes easier to gain weight and harder to lose it the next time. Dietary changes need to be long term.

Lifestyle changes that may be helpful

Support

Many doctors give overweight patients a pill, a pep talk, and a pamphlet about diet and exercise, but that combination leads only to minor weight loss. When overweight people attend group sessions aimed at changing eating and exercise patterns, keep daily records of food intake and exercise, and eat a specific low-calorie diet the outcome is much more successful. Group sessions where participants are given information and help on how to make lifestyle changes appear to improve the chances of losing weight and keeping it off. Such changes may include shopping from a list, storing foods out of sight, keeping portion sizes under control, and avoiding fast-food restaurants.

Exercise

According to most short-term studies, the effect of exercise alone (without dietary restriction) on weight loss is small, partly because muscle mass often increases even while fat tissue is reduced, and perhaps because some exercising people will experience increased appetites. The long-term effect of regular exercise on weight loss is much better, and exercise appears to help people maintain weight loss. People who have successfully maintained weight loss for over two years report continuing high levels of physical activity. Combining exercise with healthier eating habits results in the best short- and long-term effects on weight loss, and should reduce the risk of many serious diseases.

Avoid weight cycling

People who experience “weight cycling” (repetitive weight loss and gain) have a tendency toward binge eating (periods of compulsive overeating, but without the self-induced vomiting seen in bulimia), according to a review of numerous studies focusing on weight loss. The researchers also found an association between weight cycling and depression or poor body image. The most successful weight-loss programs (in which weight stays off, mood stays even, and no binge eating occurs) appear to use a combination of moderate caloric restriction, moderate exercise, and behaviour modification, including examination and adjustment of eating habits.

Nutritional supplements that may be helpful

5-HTP

5-hydroxytryptophan (5-HTP), the precursor to the chemical messenger (neurotransmitter) serotonin, has been shown in three short-term controlled trials to reduce appetite and to promote weight loss. In one of these trials (a 12-week double-blind trial), overweight women who took 600 to 900 mg of 5-HTP per day lost significantly more weight than did women who received a placebo. In a double-blind trial with no dietary restrictions, obese people with type 2(non-insulin-dependent) diabetes who took 750 mg per day of 5-HTP for two weeks significantly reduced their carbohydrate and fat intake. Average weight loss in two weeks was 4.6 pounds, compared with 0.2 pounds in the placebo group.

Glucomannan

Supplementation with 3 to 4 grams per day of a bulking agent called glucomannan, with or without a low-calorie diet, has promoted weight loss in overweight adults, while 2 to 3 grams per day was effective in a group of obese adolescents in another controlled trial.

Multiple vitamin minerals

Diets that are low in total calories may not contain adequate amounts of various vitamins and minerals. For that reason, taking a multiple vitamin-mineral supplement is advocated by proponents of many types of weight-loss programs, and is essential when calorie intake will be less than 1,100 calories per day.

Pyruvate

Pyruvate, a compound that occurs naturally in the body, might aid weight-loss efforts. A controlled trial found that pyruvate supplements (22 to 44 grams per day) enhanced weight loss and resulted in a greater reduction of body fat in overweight adults consuming a low-fat diet. Three controlled trials combining 6 to 10 grams per day of pyruvate with an exercise program reported greater effects on weight loss and body fat than that seen with a placebo plus the exercise program. Animal studies suggest that pyruvate supplementation leads to weight loss by increasing the resting metabolic rate.

HCA

(-)-Hydroxycitric acid (HCA), extracted from the rind of the Garcinia cambogia fruit grown in Southeast Asia, has a chemicalcomposition similar to that of citric acid (the primary acid in oranges and other citrus fruits). Preliminary studies in animals suggest that HCA may be a useful weight-loss aid. HCA has been demonstrated in the laboratory (but not yet in clinical trials with people) to reduce the conversion of carbohydrates into stored fat by inhibiting certain enzyme processes. Animal research indicates that HCA suppresses appetite and induces weight loss. However, a double-blind trial found that people who took 1,500 mg per day of HCA while eating a low-calorie diet for 12 weeks lost no more

weight than those taking a placebo. A double-blind trial of Garcinia cambogia (2.4 grams of dry extract, containing 50% hydroxycitric acid) found that the extract did not increase energy expenditure; it was therefore concluded that this extract showed little potential for the treatment of obesity at this amount.[87] Nonetheless, another double-blind trial found that using the same amount of Garciniacambogia extract significantly improved the results of a weight-loss diet, even though the amount of food intake was not affected.

7-KETO

The ability of 7-KETO (3-acetyl-7-oxo-dehydroepiandrosterone), a substance related to DHEA, to promote weight loss in overweight people has been investigated in one double-blind trial. Participants in the trial were advised to exercise three times per week for 45 minutes and to eat an 1,800-calorie-per-day diet. Each person was given either a placebo or 100 mg of 7-KETO twice daily. After eight weeks, those receiving 7-KETO had lost more weight and lowered their percentage of body fat further compared to those taking a placebo. These results may have been due to increases in levels of a thyroid hormone (T3) that plays a major role in determining a person's metabolic rate, although the levels of T3 did not exceed the normal range.

Chromium

The mineral chromium plays an essential role in the metabolism of carbohydrates and fats and in the action of insulin. Chromium, usually in a form called chromium picolinate, has been studied for its potential role in altering body composition. Chromium has primarily been studied in body builders, with conflicting results. In people trying to lose weight, a double-blind study found that 600 mcg per day of niacin-bound chromium helped some participants lose more fat and less muscle. However, three other double-blind trials have found no effect of chromium picolinate on weight loss, though in one of these trials lean body mass that was lost during a weight-loss diet was restored by continuing to supplement chromium after the diet. A recent comprehensive review combining the results of ten published and unpublished double-blind studies concluded that chromium picolinate supplementation may have a small beneficial effect on weight loss.

CLA

A double-blind trial found that exercising individuals taking 1,800 mg per day of conjugated linoleic acid (CLA) lost more body fat after 12 weeks than did a similar group taking a placebo. However, two other studies found that amounts of CLA from 0.7 to 3.0 grams per day did not affect body composition. Most double-blind trials have found that larger amounts of CLA, 3.4 to 4.2 grams per day, do reduce body fat; however, one double-blind study of experienced strength-training athletes reported no effect of 6 grams per day of CLA on body fat, muscle mass, or strength improvement.

Fibre

Fibre supplements are one way to add fibre to a weight-loss diet. Several trials have shown that supplementation with fibre from a variety of sources accelerated weight loss in people who were following a low-calorie diet. Other researchers found, however, that fibre supplements had no effect on body weight, even though it resulted in a reduction in food intake.

HMB

Biochemical and animal research show that HMB has a role in protein synthesis and might, therefore, improve muscle growth and overall body composition when given as a supplement. However, double-blind human research suggests that HMB may only be effective when combined with an exercise program in people who are not already highly trained athletes. Double-blind trials found no effect of 3 to 6 grams per day of HMB on body weight, body fat, or overall body composition in weight-training football players or other trained athletes. However, one double-blind study found that 3 grams per day of HMB increased the amount of body fat lost by 70-year old adults who were participating in a strength-training program for the first time. A double-blind study of young men with no strength-training experience reported greater improvements in muscle mass (but not in percentage body fat) when HMB was used in the amount of 17 mg per pound of body weight per day.[114] However, another group of men in the same study given twice as much HMB did not experience any changes in body composition.

Amylase inhibitors

Amylase inhibitors are also known as starch blockers because they contain substances that prevent dietary starches from being absorbed by the body. Starches are complex carbohydrates that cannot be absorbed unless they are first broken down by the digestive enzyme amylase and other, secondary, enzymes. When starch blockers were first developed years ago, they were found not to be potent enough to prevent the absorption of a significant amount of carbohydrate. Recently, highly concentrated starch blockers have been shown to be more effective, but no published human studies exist investigating their usefulness for weight loss.

Chitosan

Chitosan is a fibre-like substance extracted from the shells of crustaceans such as shrimp and crab. Animal studies suggested that chitosan supplementation reduces fat absorption, but controlled human trials have found no impairment of fat absorption from supplementation with 2,700 mg of chitosan per day for seven days or 5,250 mg per day for four days. A double-blind study in Poland found that people taking 1,500 mg of chitosan three times per day during a weight-loss program lost significantly more weight than did people taking a placebo with the same program. Other studies using smaller amounts of chitosan have reported no effects on weight loss.

DHEA

One double-blind trial found 100 mg per day of DHEA was effective for decreasing body fat in older men, and another double-blind trial found 1,600 mg per day decreased body fat and increased muscle mass in younger men, . However, DHEA has not been effective for improving body composition in women or in other studies of men.

Guar gum

Guar gum, another type of fibre supplement, has not been effective in controlled studies for weight loss or weight maintenance.

L-carnitine

The amino acid L-carnitine is thought to be potentially helpful for weight loss because of its role in fat metabolism. In a preliminary study of overweight adolescents participating in a diet and exercise program, those who took 1,000mg of L-carnitine per day for three months lost significantly more weight than those who took a placebo. A weakness of this trial, however, was the fact that the average starting body weight differed considerably

between the two groups. A double-blind trial found that adding 4,000 mg of L-carnitine per day to an exercise program did not result in weight loss in overweight women.

Soy

Animal and human studies have suggested that when soy is used as a source of dietary protein, it may have several biological effects on the body that might help with weight loss. A preliminary study found that people trying to lose weight using a meal-replacement formula containing soy protein lost more weight than a group not using any formula.[146] However, controlled studies comparing soy protein with other protein sources in weight-loss diets have not found any advantage of soy. When soy protein is used for other health benefits, typical daily intake is 20 grams per day or more.

Blue-green algae

Blue-green algae, or spirulina, is a rich source of protein, vitamins, minerals, and essential fatty acids. In one double-blind trial, overweight people who took 2.8 grams of spirulina three times per day for four weeks experienced only small and statistically no significant weight loss.[150] Thus, although spirulina has been promoted as a weight-loss aid, the scientific evidence supporting its use for this purpose is weak.

Whey protein

Whey protein may aid weight loss due to its effect on appetite. In a preliminary study, people were given 48 grams of either whey protein or milk protein (casein). Whey consumption resulted in more hunger satisfaction and reduced the amount of food eaten 90 minutes later compared with casein consumption.[151] However, a double-blind study found that men taking 1.5 grams per 2.2 lbs body weight per day of whey protein for 12 weeks along with a low-calorie diet and a strength training exercise program lost the same amount of weight and body fat as did a control group that followed a similar program, but took a casein supplement instead of whey protein.

Herbs that may be helpful

Cayenne

Research has suggested that incorporating cayenne pepper into the diet may help people lose weight. Controlled studies report that adding 6 to 10 grams of cayenne to a meal or 28 grams to an entire day's diet reduces hunger after meals and reduces calories consumed during subsequent meals. Other controlled studies have reported that calorie burning by the body increases slightly when 10 grams of cayenne is added to a meal or 28 grams is added to an entire day's diet However, no studies have been done to see if regularly adding cayenne to the diet has any effect on weight loss.

Guaraná

The herb guaraná contains caffeine and the closely related alkaloids theobromine and theophylline; these compounds may curb appetite and increase weight loss. Caffeine's effects are well known and include central nervous system stimulation, increased metabolic rate, and a mild diuretic effect. In a double-blind trial, 200 mg per day of caffeine was, however, no more effective than a placebo in promoting weight loss. Because of concerns about potential adverse effects, many doctors do not advocate using caffeine or caffeine-like substances to reduce weight.

Yohimbine

The ability of Yohimbine, a chemical found in Yohimbe bark, to stimulate the nervous system, and to promote the release of fat from fat cells, has led to claims that it might help weight loss by raising metabolic rate, reducing appetite, or increase fat burning. Although a preliminary trial found Yohimbine ineffective for weight loss, a double-blind study found that women taking 5 mg of Yohimbine four times per day along with a weight-loss diet lost significantly more weight than those taking a placebo with the same diet after three weeks. However, a similar study using 18 mg per day of Yohimbine for eight weeks reported no benefit to weight loss compared with a placebo. A double-blind study of men who were not dieting reported no effect of up to 43 mg per day of Yohimbine on weight or body composition after six months. All of these studies used pure Yohimbine; no study has tested the effects of Yohimbe herb on weight loss.

Green tea

Green tea extract rich in polyphenols (epigallocatechin gallate, or EGCG) may support a weight-loss program by increasing energy expenditure or by inhibiting the digestion of fat in the intestine. Healthy young men who took two green tea capsules (containing a total of 50 mg of caffeine and 90 mg of EGCG) three times a day had a significantly greater energy expenditure and fat oxidation than those who took caffeine alone or placebo. In a preliminary study of moderately obese individuals, administration of a specific green tea extract (AR25) resulted in a 4.6% reduction in average body weight after 12 weeks. The amount of green tea extract used in this study supplied daily 270 mg of EGCG and 150 mg of caffeine. While caffeine is known to stimulate metabolism, it appears that other substances besides caffeine were responsible for at least part of the weight loss. Although the extract produced few side effects, one individual developed abnormal liver function tests during the study. Additional studies are needed to confirm the safety and effectiveness of green tea extracts for promoting weight loss.

Guggul

Coupled with exercise in a double-blind trial, a combination of guggul, phosphate salts, hydroxycitrate, and tyrosine has been shown to improve mood with a slight tendency to improve weight loss in overweight adults. Daily recommendations for guggul are typically based on the amount of guggulsterones in the extract. A common intake of guggulsterones is 25 mg three times per day. Most guggul extracts contain 5 to 10% guggulsterones and can be taken daily for 12 to 24 weeks.

Coleus

Although no clinical trials have been done, there are modern references to use of the herb coleus for weight loss. Coleus extracts standardized to 18% forskolin are available, and 50 to 100 mg can be taken two to three times per day. Fluid extract can be taken in the amount of 2 to 4 ml three times per day.

Bitter orange

Although historically used to stimulate appetite, bitter orange is frequently found in modern weight-loss formulas because synephrine is similar to the compound ephedrine, which is known to promote weight loss. In one study of 23 overweight adults, participants taking a daily intake of bitter orange (975 mg) combined with caffeine (525 mg) and St. John's Wort (Hypericum perforatum, 900 mg) for six weeks lost significantly more body weight and fat than the control group.[173] No adverse effects on heart rate or blood pressure were found. Bitter orange standardized to contain 4 to 6% synephrine had an

anti-obesity effect in rats. However, the amount used to achieve this effect was accompanied by cardiovascular toxicity and mortality.

Wound Healing

Wound healing is the process of repair that follows injury to the skin and other soft tissues.

Wounds may result from trauma or from a surgical incision. In addition, pressure ulcers (also known as decubitus ulcers or bed sores), a type of skin ulcer, might also be considered wounds. The capacity of a wound to heal depends in part on its depth, as well as on the overall health and nutritional status of the individual.

Following injury, an inflammatory response occurs and the cells below the dermis (the deepest skin layer) begin to increase collagen (connective tissue) production. Later, the epithelial tissue (the outer skin layer) is regenerated. Dietary modifications and nutritional and herbal supplements may improve the quality of wound healing by influencing these reparative processes or by limiting the damaging effects of inflammation.

What are the symptoms of wound healing?

Symptoms include swelling, stiffness, tenderness, discoloration, skin tightness, scabbing, itching, and scar formation.

Dietary changes that may be helpful

Building and repairing tissue requires adequate amounts of calories and protein to fuel the repair mechanisms, as the skin and underlying tissues are made of protein. While major wounds from extensive injuries or major surgery significantly raise protein and calorie requirements, optimal healing of minor wounds should not require changes from a typical, healthful diet. In a study of malnourished people with skin ulcers, those who were given a diet containing 24% protein showed a significant reduction in the size of the ulcer, whereas those given a diet containing 14% protein had no significant improvement.[2] This study suggests an increase in dietary protein can improve wound healing in malnourished people. It is not known whether the same benefit would be observed in well-nourished people.

Nutritional supplements that may be helpful

Supplementation with bromelain, an enzyme derived from pineapple stem, prior to and following a surgical procedure has been shown to reduce swelling, bruising, healing time, and pain. Bromelain supplementation has also been shown to accelerate the healing of soft-tissue injuries in male boxers. The amount of bromelain used in these studies was 40 mg four times per day, in the form of enteric-coated tablets. Enteric-coating prevents the stomach acid from partially destroying the bromelain. Most currently available bromelain products are not enteric-coated, and it is not known if such products would be as effective as enteric-coated bromelain.

Thiamine (vitamin B1), pantothenic acid (vitamin B5), and other B vitamins have all been shown to play a role in wound healing in animal studies. For this reason, although human research is lacking, some alternative healthcare practitioners recommend a high-potency B vitamin supplement to promote wound healing.

Vitamin C is needed to make collagen (connective tissue) that strengthens skin, muscles, and blood vessels and to ensure proper wound healing. Severe injury appears to increase vitamin C requirements, and vitamin C deficiency causes delayed healing. Preliminary human studies suggest that vitamin C supplementation in non-deficient people can speed healing of various types of wounds and trauma, including surgery, minor injuries, herniated intervertebral discs, and skin ulcers. A combination of 1–3 grams per day of vitamin C and 200–900 mg per day of pantothenic acid has produced minor improvements in the strength of healing skin tissue.

Zinc is a component of many enzymes, including some that are needed to repair wounds. Even a mild deficiency of zinc can interfere with optimal recovery from everyday tissue damage, as well as from more serious trauma. One controlled trial found the healing time of a surgical wound was reduced by 43% with oral supplementation of 50 mg of zinc three times per day, in the form of zinc sulphate.

Whether oral zinc helps tissue healing when no actual zinc deficiency exists is unclear, but doctors often recommend 30 mg of zinc per day for four to six weeks to aid in the healing of wounds. Topical zinc-containing treatments, on the other hand, have improved healing of skin wounds even when there is no deficiency. Long-term oral zinc supplementation must be accompanied by copper supplementation to prevent a zinc-induced copper deficiency. Typically, if 30 mg of zinc are taken each day, it should be accompanied by 2 mg of copper. If 60 mg of zinc are used, it should be accompanied by 3 mg of copper each day.

Preliminary and controlled studies of people with severe burns and other types of injuries showed that supplementation with 10–30 grams of ornithine alpha-ketoglutarate (OKG) per day significantly improved wound healing and decreased the length of hospital stays. Improved healing from major trauma and surgery has also been demonstrated with oral supplements including several grams per day of glutamine.

Vitamin A plays a central role in wound healing, but the effect of supplemental vitamin A in people who have suffered a minor injury and are not vitamin A-deficient remains unclear. Vitamin A supplements have been shown to improve healing in animal studies, and may be especially useful in a topical ointment for skin injuries in people taking corticosteroid medications. Although there are no studies in humans, some doctors recommend 25,000 IU of vitamin A per day, beginning two weeks prior to surgery and continuing for four weeks after surgery.

Animal studies have shown that supplementing with vitamin E can decrease the formation of unwanted adhesions following a surgical wound. In addition, wound healing was more rapid in animals fed a vitamin E-rich diet than in those fed a standard diet.[27] In another study, however, wound healing was inhibited by supplementation with a massive amount of vitamin E (equivalent to about 35,000 IU). This adverse effect of vitamin E was prevented by supplementation with vitamin A. Although the relevance of these studies to humans is not clear, many doctors recommend supplementing with both vitamins A and E in order to enhance wound healing and prevent adhesion formation. Typical amounts recommended are 25,000 IU of vitamin A per day and 400 IU of vitamin E per day, beginning two weeks prior to surgery and continuing for four weeks after surgery.

Topical application of vitamin E is sometimes recommended for preventing or treating post-injury scars, although only three controlled studies have been reported. Two of these trials found no effect on scar prevention after surgery, and one trial found vitamin E improved the effect of silicon bandages on large scars called keloids.

Copper is a required cofactor for the enzyme lysyl oxidase, which plays a role in the cross-linking (and strengthening) of connective tissue. Doctors often recommend a copper supplement as part of a comprehensive nutritional program to promote wound healing. A typical amount recommended is 2–4 mg per day, beginning two weeks prior to surgery and continuing for four weeks after surgery.

Other trace minerals, such as manganese, copper, and silicon, are known to be important in the biochemistry of tissue healing. However, there have been no controlled trials exploring the effect of oral supplementation of these minerals on the rate of healing.

Glucosamine sulphate and chondroitin sulphate may both play a role in wound healing by providing the raw material needed by the body to manufacture connective tissue found in skin, tendons, ligaments, and joints. Test tube and animal studies have found that these substances, and others like them, can promote improved tissue healing. One controlled trial in humans found that wounds healed with greater strength when they were treated topically with a chondroitin sulphate-containing powder. However, no research has investigated the value of oral supplements of glucosamine or chondroitin for wound healing in humans.

Arginine supplementation increases protein synthesis and improves wound healing in animals. Two controlled trials have shown increased tissue synthesis in surgical wounds in people given 17–25 grams of oral arginine per day.

Carnosine is a small molecule composed of the amino acids histidine and alanine. The exact biological role of carnosine is not completely understood, but animal research demonstrates that it promotes wound healing. More research is warranted in this area.

Herbs that may be helpful

While many herbs may be useful in wound healing, it is important that wounds be properly cleaned and dressed before any herbal preparations are applied. This will prevent infection.

In animal studies of skin inflammation, both topical and oral aloe vera have proven beneficial in decreasing inflammation and promoting cellular repair. Topical aloe vera has facilitated wound healing in controlled human research, as well. In one controlled trial, however, topical aloe vera gel was inferior to conventional management of surgical wounds.

One preliminary trial found that a gotu kola extract helped heal infected wounds (unless they had reached bone). A review of French studies suggests that topical gotu kola can help wounds. One study found gotu kola extract helpful for preventing and treating enlarged scars (keloids).[54] Standardized extracts of gotu kola containing up to 100% total triterpenoids are generally taken, providing 60 mg once or twice per day. Animal studies have shown that constituents in gotu kola, called asiaticosides, increase antioxidant levels during wound healing and facilitate repair of connective tissues.

Horse chestnut contains a compound called aescin that acts as an anti-inflammatory and reduces oedema (swelling with fluid) following trauma, particularly sports injuries, surgery, and head injury. A topical aescin preparation is popular in Europe for the treatment of acute sprains during sporting events.

A topical preparation of chamomile combined with corticosteroids and antihistamines has been used to speed wound healing in elderly people with stasis ulcers caused by inadequate circulation, as well as in people who had tattoos removed. Topical use of chamomile ointment was also found to successfully treat mild stasis ulcers in elderly bedridden patients.

Topical application of honey has been used since antiquity to accelerate skin wound healing. Honey has been shown to inhibit the growth of several organisms responsible for wound infections. In one preliminary study, nine infants with large, open infected wounds that failed to heal with conventional treatment were treated successfully with topical application of honey. Fresh unprocessed honey was applied to wounds in amounts of 5–10 ml twice daily for a period of 21 days. All infants showed marked clinical improvement after 5 days, and the wounds were closed and free of infection by 21 days. The use of honey to treat wounds should be supervised by a doctor.

Used topically, some practitioners consider arnica to be among the best vulnerary (wound-healing) herbs available. Topical use of arnica is approved by the German government for improving wound healing. Arnica is poisonous if taken internally.

Calendula flowers were historically considered beneficial for wound healing, reducing inflammation and fighting infection as a natural antiseptic. Like Echinacea, calendula is approved in Germany for use in treating poorly healing wounds. Generally 1 tablespoon (15 grams) of calendula flowers is steeped in hot water for 15 minutes, then cloths are dipped into the liquid to make compresses. Such compresses should be applied for at least 15 minutes, initially several times per day, then tapering off as the wound improves. Traditional herbalists sometimes recommend the topical use of herbs such as St. John's Wort, calendula, chamomile, and plantain, either alone or in combination, to speed wound healing. Clinical trial in humans have not yet validated this traditional practice.

Echinacea is used among European practitioners of herbal medicine to promote wound healing and is approved by the German government for this use. Creams or ointments are applied several times a day to minor wounds.

Comfrey has anti-inflammatory properties that may decrease bruising when the herb is applied topically. Comfrey is also widely used in traditional medicine as a topical application to help heal wounds. Witch hazel can also be used topically to decrease inflammation and to stop bleeding.[74] Native Americans used poultices of witch hazel leaves and bark to treat wounds, insect bites, and ulcers. Horsetail can be used both internally and topically to decrease inflammation and promote wound healing.

Chaparral has been used topically to decrease inflammation, and pain, and promote healing of minor wounds. For topical use, cloths can be soaked in oil preparations or tea of chaparral and applied several times per day (with heat if helpful) over the affected area. Powdered chaparral can be applied directly to minor wounds, after they have been adequately cleansed.

Alginic acid is one of the main constituents in bladderwrack (Fucus vesiculosus), a type of brown algae (seaweed). Calcium alginate has shown promise as an agent to speed wound healing in animal studies but has not been demonstrated to be effective in humans.

Australian Aboriginals used the leaves of tea tree to treat cuts and skin infections, crushing and applying them to the affected area. Modern herbalists recommend tea tree oil (at a strength of 70–100%) applied moderately in small areas at least twice per day to the affected areas of skin. For a variety of reasons, some researchers have suggested that tea tree oil should not be used to treat burns.

Yeast Infection

Yeast infections usually result from an overgrowth of a species of fungus called Candida albicans. They can occur on the skin, under nails or mucous membranes of the mouth, vagina, bronchi, and lungs.

Vaginal yeast infections are one of the most common reasons that women consult healthcare professionals.

What are the symptoms of yeast infection?

Yeast infections are a type of vaginitis. The hallmark symptom of a yeast infection is itching of the external and internal genitalia, which is often associated with a white discharge that can be thick and/or curdy (like cottage cheese). Severe infections lead to inflammation of the tissue and subsequent redness, swelling, and even pinpoint bleeding.

Dietary changes that may be helpful

Some doctors believe that a well-balanced diet low in fats, sugars, and refined foods is important for preventing vaginal infections caused by Candida. In one preliminary trial, avoidance of sugar, dairy products, and artificial sweeteners resulted in a sharp reduction in the incidence and severity of Candida vaginitis. Many doctors advise women who have a yeast infection (or are predisposed to such infections), to limit their intake of sugar, fruit juices, and refined carbohydrates. For persistent or recurrent infections, some doctors recommend that fruit also be avoided.

Another trial found that dramatic increases in intake of several sugars in healthy people partially increased stool sample levels of Candida, but only in 12 out of 28 people.

Lifestyle changes that may be helpful

According to one study, yeast infections are three times more common in women who wear nylon underwear or tights, than in those who wear cotton underwear. Additional predisposing factors for Candida infection include the use of antibiotics, oral contraceptives, or adrenal corticosteroids (such as prednisone).

Underlying health conditions that may predispose someone to Candida overgrowth include pregnancy, diabetes, and HIV infection. Allergies have also been reported to promote the development of recurrent yeast vaginitis. In a preliminary trial, when the allergens were avoided and the allergies treated, the chronic recurrent yeast infections frequently resolved.[4] In most cases, sexual transmission does not play a role in yeast

infection. However, in persistent cases, sexual transmission should be considered, and the sexual partner should be examined and treated.

Nutritional supplements that may be helpful

Lactobacillus acidophilus is a species of friendly bacteria that is an integral part of normal vaginal flora. Lactobacilli help to maintain the vaginal ecosystem by preventing the overgrowth of unfriendly bacteria and Candida. Lactobacilli produce lactic acid, which acts like a natural antibiotic.

Lactobacillus acidophilus can be taken orally in the form of acidophilus yogurt, or in capsules or powder. It can also be administered vaginally. In a controlled trial, women who consumed 8 ounces of Lactobacillus acidophilus-containing yogurt per day had a threefold decrease in the incidence of vaginal yeast infections and a reduction in the frequency of Candida colonization in the vagina. In another trial, women who were predisposed to vaginal Candida infection because they were HIV-positive received either Lactobacillus acidophilus vaginal suppositories, the antifungal drug, clotrimazole (e.g., Gyne-Lotrimin®), or placebo weekly for 21 months. Compared to those receiving placebo, women receiving Lactobacillus acidophilus suppositories had only half the risk of experiencing an episode of Candida vaginitis—a result almost as good as that achieved with clotrimazole.

Many women find relief using an acidophilus-containing yogurt douche daily for a few days or weeks, depending on the severity of the infection. Three capsules of acidophilus or one-quarter teaspoon of powder can be taken orally one to three times daily. Acidophilus can also be taken preventively during antibiotic use to reduce the risk of Candida vaginitis.

Boric acid capsules inserted in the vagina have been used successfully as a treatment for vaginal yeast infections. One study demonstrated that 85% of women who used boric acid vaginal suppositories were cured of chronic recurring yeast vaginitis. These women had all previously failed to respond to treatment with conventional antifungal medicines. The suppositories, which contained 600 mg of boric acid, were inserted vaginally twice a day for two weeks, then continued for an additional two weeks if necessary. Boric acid should never be swallowed.

Herbs that may be helpful

A small, preliminary trial found that a mouthwash with diluted tea tree oil was effective in decreasing the growth of Candida albicans and in improving symptoms in AIDS patients with oral Candida infections (thrush) that had not responded to drug therapy. People in the study took 15 ml of the oral solution (dilution of tea tree oil was not given) four times per day and were instructed to swish it in their mouth for 30 to 60 seconds and then spit it out. For use of tea tree oil as a mouthwash, one should not exceed a 5% dilution and should be extremely careful not to swallow the solution.

Many doctors recommend that people with recurrent yeast infections take measures to support their immune system. Echinacea, which has the capacity to enhance immune function, is often used by people who suffer from recurrent infections. In one study, women who took Echinacea experienced a 43% decline in the recurrence rate of yeast infections.

The essential oil of cinnamon contains various chemicals that are believed to be responsible for cinnamon's medicinal effects. Important among these compounds are eugenol and cinnamaldehyde. Cinnamaldehyde and cinnamon oil vapours exhibit extremely potent antifungal properties in test tubes. In a preliminary study in people with AIDS, topical application of cinnamon oil was effective against oral thrush.

A test tube study demonstrated that oil of oregano, and an extract in the oil called carvacrol in particular, inhibited the growth of Candida albicans far more effectively than a commonly employed antifungal agent called calcium magnesium caprylate. However, clinical studies are needed to confirm these actions in humans.

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