Foods that Heal

Your diet CAN enhance your health

by Jessica Viscomi

It's no secret that fruits and vegetables are good for you, but did you know that many foods contain potent medicines? "We think of food as something that nourishes us, pleases us, and keeps us alive," writes Annemarie Colbin in *Food and Healing*. "But good doctors and healers throughout history have known that just as food continually builds our body, so it can alter it."

A number of studies have documented the numerous ill effects of poor diet on the body. However, science is also indicating that a proper diet can positively influence your health and prevent illness. The kitchen may very well become another pharmacy.

For example, Dean Ornish, M.D., demonstrated that diet (and lifestyle changes) can reverse heart disease. His study involved 48 people with moderate to severe coronary heart disease (a condition in which the coronary arteries narrow due to fatty material buildup). Study participants were randomized to participate in an intensive lifestyle change group, or a usual-care control group. The intensive lifestyle change group ate a 10 percent fat, whole foods, vegetarian diet. They also made other lifestyle changes, such as exercising more frequently and participating in support groups, for five years. They did not take any cholesterol-lowering drugs.

In the lifestyle change group, coronary artery disease regressed. However, in the control group, coronary artery disease continued to progress, and more than twice as many cardiac complications occurred (*JAMA* 280[23], Dec. 1998). This strongly suggests that diet may measurably improve health, and even change the course of disease.

Not all vegetables have the same nutritional value and health benefits, reports author and natural health professor Marcus Laux, N.D. Some provide more benefits than others. The following foods have been shown to support and heal the body in a number of ways:

Garlic

Garlic is one of the most widely researched herbs in the world, and has been used as a remedy throughout history. It contains alliin, a compound that has antimicrobial, cholesterol-lowering, and other beneficial effects, states the *Physician's Desk Reference for Herbal Medicines, Second Edition (PDR)*. Garlic may:

- **Serve as an antibiotic, antifungal, and antiviral agent.** Fresh garlic juice has been demonstrated to be an equally powerful antifungal to prescription drugs amphtericin and nystatin, write Eugene Zampieron,

N.D., A.H.G., and Ellen Kamhi, Ph.D., R.N., in *The Natural Medicine Chest.*

- **Aid digestion.** Garlic stimulates digestion by increasing the flow of gastric juices and the rate of bowel movements, according to the *New Encyclopedia of Common Diseases.*
- **Lower cholesterol and promote heart health.** A double-blind, randomized, placebo-controlled study examined 46 people with high cholesterol who were not compliant with drug therapy. Each person was given dietary counseling to lower fat intake and enteric-coated garlic powder tablets or a placebo. After 12 weeks, the garlic group experienced a significant reduction in total cholesterol and LDL ("bad") cholesterol, compared with the placebo group, who didn't experience any significant changes (*J Am Coll Nutr* 20[3], Jun 2001). Garlic has also been shown to reduce stickiness of blood platelets (which can lead to poor circulation and blood vessel obstruction when coupled with high cholesterol levels) and to slightly reduce mild high blood pressure, according to Donald J. Brown, N.D., in *Herbal Prescriptions for Better Health.*
- Fight cancer. Garlic may inhibit the development of cancer and cancer-causing substances, and stimulate the immune system, notes Patrick Quillin, Ph.D., R.N., C.N.S. In one study, a combination of garlic extract and garlic powder inhibited human tumor cell growth outside the body (*Phytomedicine* 6[1], Mar 1999).

BENEFITS OF EATING ORGANIC FOODS

Natural farming methods are used to grow organic foods. That means these foods are free of pesticides and other additives. Organic foods are gaining popularity because people are becoming more aware of the harmful effects of hormones, antibiotics, pesticides, herbicides, and preservatives. They are also questioning the safety of irradiated and genetically modified foods. The Food and Drug Administration and Centers for Disease Control and Prevention concur that the agricultural use of antibiotics strongly contributes to antibiotic resistance among bacteria in food. The source and quality of the food you eat is an important issue that deserves careful attention. For more information on organic foods, refer to the *Kids and Pesticides* Health Report and *Eating Safely.*

Onions

Onions exhibit many medicinal properties similar to their relative, garlic. They are rich in sulfur compounds called thiosulfinates, which are reported to have potent anti-inflammatory effects, as well as vitamin C and quercetin, a powerful antioxidant, writes Mark Stengler, N.D., in *The Natural Physician's Healing Therapies.* Onions may:

- **Lower blood pressure.** In one German study, each day for a period of one week, 24 patients with high blood pressure received either four capsules of an onion-olive oil product, or a placebo. The onion-olive oil product significantly decreased systolic blood pressure, and there was also a trend towards a decrease in diastolic blood pressure. All effects were shown immediately and after one week's administration (*Arzneimit* 51[2], Feb 2001).
- **Lower cholesterol and blood sugar.** In one study, diabetic rats were fed 3 percent onion powder or 15mg capsaicin (the active ingredient in chili peppers) for eight weeks. The onion-fed rats experienced an improvement in their diabetic condition, probably due to onion's blood sugar-lowering and cholesterol-lowering effects, researchers theorized. In contrast, the capsaicin group experienced no changes (*Mol Cell Biochem* 175[1-2], Oct 1997).
- **Relieve asthma.** Test tube studies have demonstrated that thiosulfanates and other compounds derived from onions inhibit inflammation-causing enzymes associated with the asthmatic response (*Prostaglandins Leukot Essent Fatty Acids.* 39[1], Jan 1990).
- **Protect against cancer.** Onions have been reported to protect against several different types of cancers, including that of the stomach, colon, and breast. One French study of 345 women found that the risk of breast cancer decreased as they ate more fiber, garlic, and onions (Eur J *Epidemiol* 14[8], Dec 1998).

Cruciferous vegetables

Cruciferous vegetables include broccoli, cabbage, cauliflower, Brussels sprouts, bok choy, collard and mustard greens, kale, kohlrabi, rutabaga, and turnips. Besides having vitamin C and fiber, they also contain phytochemicals that decrease the damage of cancer-causing chemicals (http://www.nutrition-guide.net/cruciferous_vegetables.html). The two most widely researched phytochemicals in cruciferous vegetables are diindolylmethane, or DIM, and indole-3 carbinol, or I3C. When you chew cruciferous vegetables, plant enzymes are released and then exposed to stomach acid. This forms I3C, which later yields DIM, explains Dr. Laux. These phytochemicals may:

- **Fight cancer.** DIM supplementation promotes healthy estrogen metabolism and restores a normal hormonal balance. How does this help protect against cancer? Estrogen provides many critical health benefits for both men and

women, but excessive or prolonged exposure may increase the risk of cancer for both sexes. For instance, women with higher levels of estrogen in their blood have a higher incidence of breast cancer.

Additionally, studies have shown that DIM directly inhibits cancer cell growth (*Carcinogenesis* 19, 1998; *Biochem Pharamacol* 58, 1999). Studies have also demonstrated that I3C inhibits the growth of prostate cancer cells, breast cancer cells, colon cancer cells, and cervical cancer cells in vitro.

Bioflavonoids

Bioflavonoids are responsible for the pigment in fruits and flowers. They are some of the most powerful antioxidants in nature, says Dr. Brown. They are plentiful in apples, onions, green tea, cherries, bilberries, and blueberries, as well as hawthorn, ginkgo, and milk thistle. Bioflavonoids may:

- **Lower the risk of heart disease.** Consuming a high amount of bioflavonoids in the diet is associated with a lower risk of heart disease, according to Dr. Brown.
- **Fight cancer.** In one recent animal study, the bioflavonoid quercetin inhibited pancreatic cancer cell growth in mice (Int J *Cancer 98*[5], Apr 2002).
- **Relieve allergies.** Bioflavonoids appear to directly control the factors involved in inflammation and allergies, write Michael T. Murray, N.D., and Joseph Pizzorno, N.D., in the Encyclopedia of Natural Medicine. Quercetin, considered the most active of the bioflavonoids, prevents histamine release and has a strong anti-inflammatory, antiallergy effect, according to Dr. Stengler.
- **Promote eye health.** Blueberry extract is rich in bioflavonoids called anthocyanocides. These are used to reduce nearsightedness, diabetic retinopathy (retinal damage caused by diabetes), and improve night vision, report Drs. Murray and Pizzorno. The bioflavonoid quercetin also inhibits an enzyme involved in the formation of diabetic cataracts (*Altern Med Rev* 6[2], Apr 2001).
- **Fight viruses.** Bioflavonoids, coupled with vitamin C, are important to immune function, according to Drs. Murray and Pizzorno. A Chinese study demonstrated that two bioflavonoid compounds isolated from the root of the Limonium sinense plant inhibited the replication of the Herpes Simplex Virus Type-1 (the type of herpes usually associated with the mouth, lips, and face) better than acyclovir, a commonly prescribed herpes drug. (Planta Med 66[4], May 2000).

Carotenoids

Carotenoids are plant pigments found in green leafy vegetables, yams, sweet potatoes, and carrots. They are perhaps the most important dietary antioxidants, according to Drs. Murray and Pizzorno. One of the most well-known carotenoids is beta carotene, which is converted to vitamin A within the body. Carotenoids may:

- **Fight cancer.** Beta carotene enhances the cancer-fighting activity of the body's natural killer cells, reports Dr. Quillin.

CAN'T GET ENOUGH FRUITS AND VEGGIES?

The "Five a Day for Better Health" national campaign was initiated by the National Cancer Institute, the National Institutes of Health, and the Produce for Better Health Foundation. Its purpose is to encourage people to increase their daily consumption of fruits and vegetables to at least five per day. If you lack enthusiasm for broccoli and Brussels sprouts, or if you can't seem to get enough, these supplements can help. However, remember that supplements cannot replace a healthy, balanced diet.

- **Beta carotene** is an antioxidant, immune strengthening, and anticarcinogenic carotenoid, according to Michael T. Murray, N.D., in the *Encyclopedia of Nutritional Supplements.*
- **Lutein,** a carotenoid found in spinach and dark green leafy vegetables, may protect against macular degeneration, a group of disorders that affect the retina, writes Mark Stengler, N.D., in *The Natural Physician's Healing Therapies.*
- **Lycopene,** a carotenoid found in tomatoes, has double the antioxidant activity of beta carotene. It may be a significant protector against cancer, reports Dr. Murray.
- **Vitamin C,** an important antioxidant and immunity booster, is found in citrus fruits, peppers, and dark green leafy vegetables. It is manufactured in the bodies of most mammals. However, humans need to get it from their diet or in supplement form, notes Dr. Stengler.
- **B vitamins** include thiamin, riboflavin, niacin, pantothenic acid, pyridoxine, cobalamin, folic acid, and biotin. They are found in whole grains, legumes, and cruciferous vegetables, as well as meats and poultry. B vitamins are often referred to as "stress vitamins," due to their ability to help the body cope with stress and improve energy levels. They are also used to prevent birth defects, cancer, and heart disease, according to Dr. Stengler.
- **Dietary fiber** is plentiful in fruits, vegetables, legumes, and bran. It reduces the amount of time it takes for food to pass through the intestinal tract, increases the amount of healthy bacteria in the intestines, and also increases a feeling of fullness in the stomach, reports Dr. Murray.

Several studies have shown that high levels of beta carotene are correlated with lowered risk of cancer, according to James Gordon, M.D., in *Comprehensive Cancer Care.* Another carotenoid that has made headlines lately is lycopene, which is found in tomatoes and may lower the risk of prostate cancer (*Cancer Res* 15;59[6], Mar 1999).

• *Protect against sunburns.* One study investigated the effects of administering natural carotenoid supplements to 22 fair-skinned people with 1cm2 patches of UV-induced sunburn for six months. Researchers concluded that the minimum of UV exposure needed to produce a sunburn increased significantly, and that natural carotenoids may partially protect skin from UVA and UVB-induced skin damage (*Proc Soc Exper Biol Med* 223, 2000).

Mushrooms

While some mushrooms are poisonous, others are delicious to eat and provide several health benefits. Mushrooms are rich in polysaccharides, large carbohydrate molecules that directly affect the immune system, write Drs. Zampieron and Kamhi. Reishi *(Ganoderma lucidum),* maitake *(Grifola frondosa),* and shiitake *(Lentinus edodes)* mushrooms have been revered as energy-enhancing, balancing medicines throughout Asian history. Presently, they are the focus of ongoing research. These mushrooms may:

- **Enhance immunity.** Maitake extracts may be promising immune system stimulators, according to one review (*Altern Med Rev* 6[1], Feb 2001). This possibility is being studied for several conditions, including cancer and HIV. Additionally, a reishi polysaccharide has demonstrated the ability to stimulate white blood cells, which are instrumental in fighting infection (*Abstract of the 1994 Symposium on Ganoderma Research,* Beijing Medical University).
- **Protect against cancer.** Beta-D-glucan (a polysaccharide found in maitake) was found to kill prostate cancer cells in one study at the Department of Urology at New York Medical College (*Mol Urol* 4[1], Spring 2000).
- **Lower blood sugar.** One recent study found that maitake mushrooms may lower blood sugar in people with diabetes, a condition which is marked by high blood sugar (*Diabet Med 18*[12], Dec 2001).
- **Lower cholesterol.** Scientists have isolated eritadenine, a shiitake derivative that may help prevent heart attacks by lowering cholesterol (*J Nutr* 125[8], 1995). In an animal study, maitake, shiitake, and another mushroom called enokitake (Flammulina velutipes) lowered total cholesterol levels in rats (*Exp Biol Med* 226[8], Sept 2001).

Food for thought

Hippocrates taught that food should be our medicine and medicine should be our food. Ancient systems of medicine relied heavily on certain foods to heal. Now science is beginning to confirm the medicinal properties of many fruits, herbs, vegetables, and fungi. However, do not attempt to self-treat any conditions with food without consulting your healthcare practitioner first.

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HEALTHY SHOPPER

By Lisa Schofield

MSM — The Healing Sulfur

In the Victorian era, natural sulfur springs were found to bestow tremendous rejuvenative properties; spas and fountains sprang up and it became all the rage to visit and partake in the healing, but foul-smelling, waters. Many of these fountains can still be visited, where the earth-cooled and refreshing waters can still be drunk — albeit with one's nose held firmly.

That odor indicates the strong presence of the mineral sulfur; and a cousin, methylsulfonylmethane — MSM — can also heal quite nicely and conveniently.

MSM, explain Stanley Jacob, MD, Ronald Lawrence, MD, PhD and Martin Zucker, authors of *The Miracle of MSM*, is made from DMSO, which is commonly used for the relief of arthritis and other problems such as muscle and skeletal disorders and even acute head and spinal cord trauma. "MSM delivers many of the remarkable healing properties of DMSO — but without the annoying odor of DMSO," they write. "MSM is a source of sulfur, a mineral element critical to the normal function and structure of the body. Sulfur is a raw material for the protein and connective tissue that makes up our body mass."

Earl Mindell, RPh, PhD and Melissa Block, MPh, in their book *Earl Mindell's Arthritis: What You Need To Know* , assert that methylsulfonyl methane's potential uses are numerous — "it relieves pain and inflammation, improves blood flow by dilating blood vessels, reduces formation of scar tissue, improves health of skin, hair and nails, helps normalize the immune system, reduces muscle spasms and even has some anti-parasite activity."

In their book, *Arthritis, an Alternative Medicine Definitive Guide*, authors Eugene Zampieron, ND, AHG, and Ellen Kamhi, PhD, RN, HNC point out that although MSM is produced in the body, as with most everything else, levels decline with age. MSM levels are also adversely affected by degenerative diseases such as arthritis, and poor dietary habits. "Supplementing with MSM can reduce inflammation and scar tissue, relieve pain, increase blood flow for improved exchange of nutrients, reduce muscle spasms, promote peristalsis, increase cell-wall flexibility, and reduce allergic reactions," they write.

MSM, describe Mindell and Block, is theorized to alleviate arthritis pain and inflammation through several mechanisms of action:

- Reduces muscle spasms around arthritic joints. "Muscle spasm occurs in damaged joints as they try to protect themselves from further damage and these knots can contribute a great deal to joint pain," they write.
- Relieves inflammation by providing a sensitizing effect to cortisol, an anti-inflammatory chemical produced by the body. Patients who use MSM (or DMSO) don't need as much cortisone.
- Provides sulfur molecules for collagen manufacture. "Without adequate sulfur, the body can't repair the damage that happens naturally with daily wear and tear, or the accelerated damage seen in arthritis," explain Mindell and Block.
- Inhibits the nerve impulses that deliver pain messages to the brain.

Zampieron and Kamhi write that MSM has special significance for those with rheumatoid arthritis, as this source of biologically active sulfur can help stabilize the immune system and thereby reduce the autoimmune response.

Intestinal Relief

For those suffering from inflammatory bowel conditions, which are said to be quite common, MSM can help ease the discomfort and help normalize bowel function. Inflammatory bowel conditions include IBS (irritable bowel syndrome), Crohn's disease, and ulcerative colitis. "Oral MSM helps relieve inflammatory bowel conditions such as Crohn's disease and ulcerative colitis. Crohn's usually affects the lower segment of the small intestine, causing both severe pain and diarrhea," explain Jacob, Lawrence and Zucker. "The diarrhea, in turn, leads to painful irritation and inflammation in the perineal area between the anus and the genitals. MSM helps reduce the inflammation in the gut, which will lessen pain and diarrhea."

Allergy sufferers can also obtain relief from MSM. Allergic reactions frequently are related to inflammation. Jacob, Lawrence and Zucker attribute the efficacy of MSM in allergies to its ability to block "the receptivity of histamine in sensitive tissues, such as the mucous membranes of the nasal passages. This action is something like shutting the cell door and preventing entry to histamine."

Also, MSM may provide necessary sulfur for antibody production to combat germs and allergens, as well as for producing enzymes that counteract inflammation.

Recommended dosage varies. Mindell and Block assert that the recommended oral dose of MSM is between 1,800 mg and 9,000 mg daily in three divided doses. "Start with the lowest dose and work up slowly adding 300 mg each time you increase the dose," they advise.

Zampieron and Kamhi, however, write that the typical recommended dose of MSM is between 500 and 1,000 mg daily. "Under a doctor's supervision, therapeutic amounts may be prescribed," they add.

MSM (METHYLSULPHONYLMETHANE) A CRITICAL NUTRITIONAL TOOL

Dr. Morton Walker

Sulfur, playing an indispensable role in human nutrition, is hardly considered a nutritional supplement for daily ingestion. Yet, without it, a person becomes predisposed to unnecessary illnesses.

Methylsulphonylmethane (MSM), also known as dimethyl sulfone, is a natural form of organic sulfur found in a number of common foods, including milk, meat, fish, and a variety of fruits, vegetables and grains. However, the processing of most foods we consume, especially malnourishing fast foods, through preserving, heating, canning, drying, packaging, and other processing techniques, destroys essential MSM. Unless your diet is comprised primarily of raw foods and dairy products, it is unlikely that your daily intake of MSM is sufficient for proper health management.

Most people could benefit greatly by supplementing each day with MSM. Studies show that the level of MSM in the body decreases as we age. A regimen of regularly taking MSM as a dietary supplement can prevent sulfur deficiency and replenish it for the maintenance of multiple body functions.

WHAT MSM IS AND WHAT IT DOES

Stanley Jacob, M.D., and Robert J. Herschler, Ph.D., co-discoverers of DMSO (dimethyl sulfoxide), have joined again to invent and develop MSM as a nutritional supplement and adjunctive skin agent.

The Jacob/Herschler partnership has now perfected MSM, an important, odorless, water-soluble, white crystalline material that provides a bioavailable source of dietary sulfur. By forming flexible disulfide bonds between certain amino acids, sulfur maintains conformation of many proteins for the integrity of connective tissue. In the body, thiol (sulfhydryl) groups are vital for the catalytic function of most enzymes.

Purified MSM, manufactured from wood, can be applied to the skin's surface as a gel or lotion or can be taken orally as capsules or tablets in its crystalline state. In topical form, MSM softens, smoothes, soothes, and increases skin pliability. It is nonallergenic, nonpyretic (fever-producing), and has no undesirable pharmacological effects.

Studies in the use of MSM taken by mouth indicate favorable responses to environmental and food allergies, pain from systemic inflammatory disorders such as arthritis, gastrointestinal ailments, and infections.

The three related compounds, MSM, DMSO, and DMS (dimethyl sulfide), are the collective source for 85 percent of sulfur found in all living organisms. The cycle of these sulfur compounds begins in the ocean where plankton release dimethylfulfonium salts which causes DMS to escape into the upper atmosphere. Ultraviolet light in the presence of ozone converts it into DMSO and MSM, which return to the earth as rain.

Plants absorb them, and people eat the MSM as part of the plant mineral structure. Cow's milk contains MSM because cows consume grass that's loaded with MSM. But there is not enough MSM in the diet of people living in Western industrialized countries so most people need to augment their diet with MSM in supplement form.

CLINICAL AND LABORATORY STUDIES WITH MSM

Rated as among the least toxic substances known to mankind because its lethal dose (LD50) is the same as water, MSM alleviates allergies from pollens and foods, controls hyperactivity, and relieves constipation (depending on how severely you're constipated, take 100 to 500 mg daily by mouth).

Research at Oregon Health Sciences University proved that MSM in a 16 percent water solution applied to each nostril prior to sleep reduced snoring by 80 percent. After 90 days of treatment, none of the 35 snorers tested exhibited any toxic reactions.

Rats showing advanced systemic lupus erythematosis (SLE) had an increased length of life from drinking water containing 3 percent MSM dose.

Other laboratory rats predisposed to developing breast cancer were fed MSM and simultaneously given a potent carcinogen (dimethylbenzanthracene) daily. The rodents did not develop cancer until 130 days beyond the usual time, the equivalent of an extra 10 years in human life terms.

Most people need to augment their diet with MSM in supplement form.

The same researchers from Ohio State University Medical College who performed the above breast cancer laboratory investigation, also studied dietary MSM as a protection against colon cancer. The scientists injected rats with dimethylhydrazine, a colon cancer inducer, and simultaneously put 1 percent MSM in their drinking water. Bowel tumors appeared but only long after they were expected to. It was concluded that MSM is a potential chemopreventative agent for colon cancer.

Rheumatoid arthritis (RA) affects a certain strain of mice. But RA predisposed animals given a 3 percent solution of MSM in drinking water every day did not suffer any degeneration of their articular cartilage. They remained free of rheumatoid arthritis.

For people, there is no standard dosage of MSM, but many physicians recommend a starting dose of from 500 mg to 6000 mg daily for maintenance purposes. □

DHEA

Supplementation of this synthesized hormone may have some benefits for those approaching middle age and beyond.

In recent months, DHEA has popped up on retailers' shelves like dandelions on your lawn in April. Dehydroepiandrosterone, its full name, has been touted sensationally as the fountain of youth. Although there is no such thing as a magic pill to instantly restore youth, researchers, through studies, have ascribed certain restorative properties to DHEA. Some observers believe that if you are above 30, supplementation of this hormone, which the body begins to drop production of after age 20 or so, can help maintain an overall sense of vigor, help the body to better deal with various stresses, and perhaps even lower some cholesterol levels and provide support for the prevention of certain disease states.

"DHEA is rapidly becoming known as the anti-aging miracle of the 20th Century," writes Beth M. Ley in her book, *DHEA: Unlocking the Secrets to the Fountain of Youth*. "It reaches its highest concentration during puberty and declines as the body ages. It is necessary for at least 18 different steroidal hormones associated with youth, including estrogen, progesterone, cortisone, and testosterone. Levels of all of these hormones decline with age."

Studies have demonstrated that dehydroepiandrosterone converts or stimulates production of cortisone, testosterone, progesterone and estrogens, along with other steroid hormones, as the body requires them.

In an article entitled, "DHEA: Youth in a Bottle?" in the October, 1996 issue of *Let's Live*, author Ray Sahelian, M.D., writes that "the theory behind supplementing with DHEA is that after about age 30, our bodies naturally produce less of this hormone. The expectation is that by supplementing the body's low level of this hormone, we will be able to slow down symptoms of aging and prevent degenerative disease. Anecdotal evidence suggests other benefits, including more energy and an increased sex drive."

And, according to *Nutrition News*, vol. XX, No. 2, 1996, author Siri Khalsa points out that scientific research has demonstrated that DHEA supplementation can bring relief for an array of disease states including multiple sclerosis, thyroid problems, lupus, arthritis, inflammatory bowel disease, herpes infections, allergies, stress, depression, menopause and premenstrual syndrome. It has also been used for building lean muscle tissue, and has exerted beneficial effects on collagen and skin integrity.

DHEA is the most abundant hormone produced by the adrenal glands, Sahelian states in his book *DHEA: A Practical Guide*. The adrenal glands, which are located just above the kidneys, produce more than 150 substances. Each gland has a medulla, which is the inner core, and the cortex, which is an outer sheath.

"After DHEA is made, it goes into the bloodstream, and from then on it travels all over the body and goes into our cells, where it is converted into male hormones, known as androgens, or female hormones, known as estrogens."

According to Sahelian, there are several proposed mechanisms whereby DHEA exerts its storied anti-aging effects. It "turns on the 'youth' genes in our DNA that may be shut off by low levels of DHEA in old age; decreases the incidence of osteoporosis; decreases the rate of heart disease by lowering cholesterol and acting as a blood thinner; and balances DHEA/cortisol ratios."

He cautions that studies of the effects of DHEA supplementation on aging have been performed only on rodents; therefore, similar effects on humans are unknown.

The DHEA supplements available to you are produced by dietary supplement manufacturers. Typically, notes Sahelian, the manufacturers will extract a sterol substance known as diosgenin from wild yams. "After a few side chains have been cleaved from diosgenin in the laboratory, DHEA is produced."

As far as dosages are concerned, Ley points out that the best DHEA dosages vary from individual to individual. She says it's important to take into account such factors as age and other biological influences. Dosages can range anywhere from 5 to 500 mg. Many people who have studied DHEA think it is advisable to take a blood test to determine your DHEA level before you begin supplementation, and to have the levels checked periodically, as advised by your health-care practitioner.

"Anti-aging doses would be quite low," Ley writes, "taking only enough to raise the levels to [that of] a normal 20-year-old, which would be approximately 31 mg in men, 19 mg in women." For long-term preventative measures, DHEA supplementation is typically between 5 and 50 mg daily. Therapeutic doses, however, are more sizable, commencing at about 200 mg daily.

For some people, Ley says, possible side effects that indicate that DHEA dosages are too high include acne flare-ups, unwanted hair growth, irritability and rapid heart beat.

There is a lot to be aware of before you begin taking DHEA. Ask your health product retailer for further literature written on DHEA before you purchase some. **WF**

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Lycopene

Tomato sauce's powerful, cancer fighting ally.

The latest cancer combatant is probably already sitting in your refrigerator. The tomato products already in your kitchen—yes, even your ketchup—contain a substance called "lycopene," which is reported to fight the proliferation of free radicals in your body thereby reducing the risk of cancer. Not only that, but it may also prevent heart attacks, stroke, and subdue exercise-induced asthma (EIA).

Free radicals are big news lately. Here's what they are and how they can hurt you. Richard A. Passwater, Ph.D., in his book, *All About Antioxidants*, explains, "Essentially, a free radical is an unpaired electron. Free radicals are highly volatile and reactive, and they seek out another electron to make a new pair. Free radicals cause damage when they pull electrons from normal cells of the body." This process can cause the generation of cancerous cells. How can you stop free radicals in your body? Antioxidants—of which, one of the most powerful is, of course, lycopene, Dr. Passwater believes.

Lycopene is found in tomatoes, pink grapefruit, and red watermelon, with processed tomatoes providing some of the highest concentrations. Lycopene is classified as a carotenoid, which, according to Dr. Passwater, means that it is an antioxidant that also provides color to plants. Lycopene for example, gives tomatoes their red color. According to a *Total Health* article from the July/August 2001 issue, "Processed tomatoes found in foods like tomato paste, tomato sauce and ketchup are processed with oil, which makes them highly bioavailable sources of phytonutrients. Manufacturing these products involves macerating (chopping or grinding) the fruit. The process breaks the cell walls and facilitates an even greater release of the phytonutrients." Lycopene can also be found in supplement form; the article recommends consumers look for products that contain a "standardized natural tomato extract." Studies have compounded exceptional results regarding the health benefits of lycopene. "A Harvard study of 48,000 men, for example, found that those who regularly ate lycopene-rich tomato products reduced their risk of prostate cancer by as much as 34% compared to men who ate processed tomatoes less frequently. And another large study found that men who consumed the most lycopene had half as many heart attacks as men who consumed the least," reports the August 2001 issue of *Environmental Nutrition*.

Lycopene isn't only for men—women, too, may benefit from it. "Researchers at the University of Illinois report that women with the highest lycopene levels had a five-fold lower risk of developing precancerous signs of cervical cancer than women with lowest lycopene levels," writes James Balch, M.D., in his *Total Health* article.

Not only has lycopene been shown to combat cancer and heart disease, but arteriosclerosis, and the harmful effects of UV rays as well, according to sources. Further, Israeli researchers have found that it may also assuage exercise-induced asthma. "It's likely that these supplements relieve asthma by quenching the oxidants produced by overactive inflammatory cells in the airways," writes Jeff Bauer, in the October 2001 issue of *RN*.

Research published in the *American Journal of Hypertension* points to lycopene as a possible treatment for mild hypertension. Hypertension is reported to cause more than 75% of all strokes and heart attacks, according to *Total Health*'s July/August 2001 issue. The magazine quotes Esther Paran, M.D., head of the Hypertension Unit at Soroka University Hospital in Be'er Sheva, Israel, "This research is the first of its kind to provide documented evidence that a natural tomato extract can manage blood pressure in mild hypertensive patients. This is fantastic news for those who have had a difficult time controlling mild to moderate hypertension through lifestyle changes alone."

Most of the above studies were done using the Lyc-O-Mato brand supplement, which is made from crossbred tomatoes. James Balch, M.D., writes, "Since the discovery of lycopene, a group of scientists in Israel has used conventional cross-breeding methods to develop a strain of tomatoes very rich in lycopene, with up to four times the amount found in regular tomatoes."

Balch recommends that high-risk groups, such as smokers, drinkers, and those at risk for prostate cancer supplement their diets with a natural lycopene supplement. He writes, "It is important for people in risk groups, and those who don't get enough dietary lycopene, to take an all natural tomato lycopene supplement...It is vital that people choose an all-natural supplement because it is much more readily absorbed by the body than synthetic versions." **WF**

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"A Tomato Antioxidant May Relieve Asthma," by Jeff Bauer, *RN*, October 2001

Accelerate Brain Function with Phosphatidylserine

You forgot your keys, again. You can't seem to remember the name of someone you were just introduced to. Sound familiar? As we age, we can lose over half of our ability to perform tasks related to memory, learning and concentration. Cognitive decline can already begin in our forties.

There is excellent research showing that the nutrient, Phosphatidylserine (PS), has a profound influence on brain function and thinking ability. PS shows much promise in improving cognitive function, especially as we age. As PS "benefits virtually every brain function that can be tested," it may also be helpful for various learning and behavior disorders in younger people as well.

Kidd, Parris M Ph D *Phosphatidylserine (PS) Number-One Brain Booster* Keats Publishing 1998

What is Phosphatidylserine (PS)?

PS belongs to a unique class of fat-soluble nutrients It is a building block for nerve cell membranes and through that revitalizes all nerve cell functions. Although it is contained in each cell membrane, PS is most highly concentrated in brain cells

Sophisticated technology has enabled the development of a plant-based source of PS, derived from soy phospholipids, that is very effective in clinical studies.

How it affects our ability to think

The membrane is a major action centre in the cell: it regulates what goes in and out, how cells talk to one another and numerous other vital actions. As we age our cell membranes become less efficient. Phosphatidylserine increases cell membrane efficiency and revitalizes membrane function. In the brain PS also has a profound effect on the function of neurotransmitters and synapses, the connections that make up brain circuits.

Some key studies

Dr. Thomas Crook and his researchers conducted two important studies on PS. In 1991, they studied the effect of PS on 149 people, aged 50-75. PS was given at 300 mg per day (100 mg three times per day) versus a placebo. The subjects were assessed at the beginning of the study and at three-week intervals.

A subset of people with greater memory impairment seemed to benefit the most from PS. Their telephone number recall, misplaced objects recall, paragraph recall and ability to concentrate while reading or talking all improved and stayed that way for approximately 4 weeks after PS supplementation ended. One test involved learning names and faces The test subjects went from the cognitive age of 64 (equivalent to a person 64 years old) at the beginning of the study, to a cognitive test age of 52 years. They actually had a 12-year recovery in cognitive function!

Crook, T H et al., "Effects of phosphatidylserine in age-associated memory impairment." *Neurol* 1991 41 644-649

Safety and Dosage

PS has a long history of safe use as a dietary supplement and numerous clinical studies on humans verify its safety. A large dose (600 mg) could delay sleep in some persons, so it's preferable to take PS with meals.

Internationally renowned researcher and author of *Phosphatidylserine (PS): Number-One Brain Booster*, Dr. Parris Kidd, suggests: "A reasonable supplementation strategy with PS is to begin at a higher level of intake (200 to 300 mg per day with meals) for a month or two, which should saturate the cell membranes, then to go into a maintenance mode at a lower level of intake (100 to 200 mg daily)."

Examine the label closely

It pays to read the fine print to determine the actual amount of PS in a product. To be effective, a PS product should deliver a minimum of 100 milligrams of PS per day. Products with less PS may not achieve the desired result.

Some products look like they contain PS but at closer examination contain *phosphorylated serine*, a substance that does not substitute for PS and may even have adverse effects.

What else can we do?

PS may delay or even roll back cognitive decline as we age. But lifestyle also plays a critical role. Excessive free radicals formed from smoking, alcohol abuse, environmental pollution, and chronic emotional stress, have a cumulative negative effect on brain cells and hasten deterioration.

Dr. Kidd: "Particularly when employed in conjunction with exercise and lifestyle revision, PS stands to improve quality of life for the young, the middle aged and the elderly...Offering proven benefits that are not matched by any other nutrient or pharmaceutical, PS should be the foundation of everyone's personal program for conserving memory and other mental capacities so endangered by modern life."

Kidd, Parris M Ph D *Phosphatidylserine (PS) Number-One Brain Booster* Keats Publishing 1998

As more consumers appreciate and use health-enhancing natural products, their number seems to multiply. How can a consumer recognize quality products and reputable companies? While we focus on Natural Factors product excellence, this series will help all persons interested in better health to become discriminating alternative health shoppers.

GLUCOSAMINE

by Peter Huck

Fending Off Joint Stiffness and Pain

We all know the aging process brings unwanted physical changes such as wrinkles, extra pounds and balding and/or graying of the hair. However, aging not only can wound our vanity but also can significantly contribute to the increased risk for chronic and degenerative diseases. Some chronic conditions, such as arthritis, are so prevalent among those over the age of 50, that they seem almost inevitable. Surveys show that more than 40 million Americans have osteoarthritis (the most common type of arthritis). With a four out of five chance of someday suffering from osteoarthritis, it is not surprising that many people greet ails such as stiffness, loss of joint function, acute localized pain, tenderness and swelling or bony hardness as a forgone conclusion of aging.

And unfortunately, the unstoppable aging process is indeed the primary cause of osteoarthritis. The cumulative effects of decades of "wear-and-tear" lead to degenerative changes caused by stress to the collagen matrix of cartilage. Damage to cartilage results in the release of enzymes that destroy cartilage components. With aging, the ability to restore and manufacture normal cartilage structures greatly decreases. Compounding the frustration of being inflicted with osteoarthritis is the fact that anti-inflammatory drugs such as ibuprofen provide little more than temporary relief. However, an ever increasingly popular dietary supplement called glucosamine is grabbing headlines as a treatment for osteoarthritis that does much more than simply dull the pain or mask the symptoms.

For more than a decade, a number of clinical studies have been conducted to test the efficacy of glucosamine as a therapeutic treatment of osteoarthritis. Collectively, the results of these studies show a number of benefits including: symptomatic relief of joint pain and inflammation; improved articular function and range of movement; blocked degradation of cartilage; stimulation of the synthesis and repair of connective tissue and cartilage; better long-term pain reduction than over-the-counter medications; and suppression of symptoms weeks after glucosamine use is discontinued. To fully understand glucosamine's value to people suffering from arthritis, however, it is helpful to look at exactly how glucosamine functions in the human body.

Dense connective tissues, such as ligaments and tendons, provide stability and support to muscle-skeletal structures such as joints. As a person ages, or when a joint is injured or traumatized, the body's defense mechanism responds by increasing its production of soft tissue, synovial fluid, articular cartilage and connective tissue in an attempt to repair the damaged tissue. Osteoarthritis results when the degenerative process exceeds the regenerative or maintenance process. To meet internal physiological demands, the body draws from its existing supply of components to satisfy the manufacturing needs.

Glucosamine is one such natural component in the body. Glucosamine is a simple molecule that is produced from glucose and glutamine. Its primary function for joints is to stimulate the manufacture of glycosaminoglycans (proteoglycans), which are vital base substances of cartilage. These glycosaminoglycan molecules are responsible for the gel-like nature and shock-absorbing capabilities of cartilage. Glucosamine also is one of the major building blocks for the natural synthesis of synovial fluid and articular cartilage.

As many people age, they lose the ability to produce sufficient levels of glucosamine. Without glucosamine, the cartilage in joints often deteriorates to the point where bone rubs on bone. In other words, osteoarthritis has set in.

Supplemental glucosamine helps by penetrating joint cartilage and entering the chondrocyte. Once absorbed, it is then distributed primarily to joint tissues, where it is incorporated into the connective tissue matrix of cartilage, ligaments and tendons.

Currently, there are three forms of glucosamine available to consumers individually and in various product formulations—glucosamine sulfate, glucosamine hydrochloride (HCL) and n-acetylglucosamine (NAG)—each touted by their respective advocates as the most bioavailable and efficacious form. Although some products do utilize NAG, glucosamine HCL and glucosamine sulfate are far more prevalent in the market. Of these two forms, glucosamine sulfate, whether because of proven effectiveness (most of the clinical studies conducted on glucosamine utilized glucosamine sulfate) or because of more effective marketing, appears to be the more popular form.

Dosage recommendations for glucosamine vary slightly. Some medical practitioners recommend a loading dose of 500 mg given three times daily for six to eight weeks, followed by a maintenance dose ranging from 750 mg to 1,500 mg daily depending on the individual condition. Others recommend ingesting 1,500 mg daily both as a first and maintenance dose. Glucosamine supplementation does require a degree of patience on the user's part, however, as it can take between two to eight weeks to note significant benefits. For those over the age over 65, it may even take several months before results are seen. Glucosamine is not toxic and there are no known interactions with any medications.

Collagen Type II: From Pouty Lips to Aching Hips

By Peter Croatto

The cosmetic benefits of collagen have been known for years–just ask anyone in Los Angeles. It's been used for years to reduce wrinkles, either through external use or by being systematically injected.

Collagen type II has also proven to be very effective in the fight against joint pain. In a 90-day, double-blind, placebo-controlled, follow up study at Harvard Medical School, scientists found that 28 patients (out of a total of 60) taking small doses of undenatured collagen type II showed significant improvement in their severe joint discomfort than those who took a placebo.

The powers of collagen type II can be traced to a process called oral tolerization, which helps the body to determine the difference between foreign invaders (bacteria) and beneficial elements (nutrients).

A series of complex immune processes allows patches of tissue surrounding the small intestine to screen incoming compounds and serve as a switch to turn the body's immune response to foreign substances on or off.

Collagen, as found in the human body, has been described as the glue that holds everything together. It is made of densely woven strands of amino acids built into chains of proteins. It imparts shape and resiliency to cartilage–the firm, white connective tissue at the end of bones. Collagen type II is only found in cartilage, whose breakdown leads to the more than 100 forms of arthritis.

For the shopper, it's important to find a cartilage source that is closely related to human articular cartilage. Oral tolerization requires that collagen type II be the same as found in naturally occurring cartilage.

Currently, there are two acceptable forms of collagen-bovine (usually tracheal cartilage) and chicken (usually from the sternum). Both boast positive clinical studies. Bovine cartilage is a good source of glucosamine and chondroitin, deemed the "building blocks" for joint tissues.

Bovine cartilage is also closer to human articular cartilage, but that is irrelevant. What is relevant is to find a format that activates oral tolerization, which can be done if the collagen is properly prepared and delivered.

Collagen is available in undenatured and denatured extracts. An undenatured extract is made with little or no heat and limited processing, typically with pepsin (the stomach enzyme that acts as a catalyst in protein digestion). There is just enough processing to concentrate the material and make it soluble.

With a denatured extract, high heat, acids, enzymes, or other methods are used to make the extract more soluble and even reduce them to smaller peptide units. However, these methods alter the protein's structure, which might interfere with oral tolerization.

TEST YOUR KNOWLEDGE ABOUT COLLAGEN TYPE II

1) What dosage of collagen type II has most often been tested successfully in clinical trials?
a) 0.5 to 10 mg; b) 10 to 20 mg; c) 20 to 40 mg; d) 50 to 100 mg

2) Orally administered collagen type II has been shown to reduce arthritis as a result of what cosmetic surgery?
a) Tummy tuck
b) Face lift
c) Breast implants w/saline
d) Breast implants w/silicone
e) All of the above

3) How many different collagens have been identified and described?
a) 5; b) 9; c) 14; d) 21

4) What is a major cause of arthritis?
a) Trauma
b) Nutritional deficiencies
c) Bad diet
d) Genetics
e) All of the above

5) Collagen helps form what part of the eye?
a) Retina
b) Cornea
c) Optical nerve
d) Iris

SOURCES

Arthritis: The Doctors' Cure. By Michael Loes, M.D., Gary Wikholm, M.D., Megan Shields, M.D., David Steinman. Keats Publishing, New Canaan, CT. 1998.

The Collagen Type II Cure for Arthritis & Heart Disease. By Alex Duarte, O.D., Ph.D. Alex Duarte, 1997.

Arthritis: *An Alternative Medicine Definitive Guide*. By Eugene Zampieron, N.D., A.H.G.; Ellen Kamhi, Ph.D, R.N., H.N.C.; and Burton Goldberg. AlternativeMedicine.com Books, Tiburon, CA. 1999.

Answers: 1.) a; 2.) d; 3.) c; 4.) e; 5.) b

ACIDOPHILUS: BENEVOLENT BACTERIA

A strain of lactic bacteria that naturally inhabits the body can actually be a help in a number of health situations. Acidophilus (Lactobacillus acidophilus), "the friendly bacteria," is known for its beneficial properties in treating digestion and bowel disorders when used regularly in any of its forms.

Lactic bacteria are single-celled organisms which have the ability to transform sugar into lactic acid. They are normally present in the skin, the digestive system and the vaginal mucosa of humans, where they protect their hosts against the harmful bacteria. The acidophilus bacteria can be taken in either fermented milk products like yogurt (check the label for acidophilus content) and sweet acidophilus milk, or as a concentrated supplement in liquid, powder or tablet form.

In their simplest form, these bacteria work on the milk protein casein, and make it easier to digest. For those with a lactose intolerance, the friendly bacteria make it possible to eat yogurt and drink sweet acidophilus milk because the bacteria digest the lactose for them.

The trade association for the natural foods industry recently set a strict labeling standard for acidophilus-type products, because of the concern over the quality of the products that are on the market. The new standards require that manufacturers' labels identify the amount and type of living microorganisms in the product, while also including an expiration date, storage information and a list of other ingredients. The label should be checked on all acidophilus products, since it is still acceptable to use the suffix "dophilus" in the product name even though Lactobacillus acidophilus may be fourth or fifth in the list of ingredients.

BACTERIA BENEFITS

Acidophilus research has determined that the bacteria has been a positive factor in treating a number of health problems. Regular use of acidophilus culture, for example, has been found to help keep the intestines clean. Lactose, complex carbohydrates, pectin and vitamin C plus roughage can bring about additional growth of intestinal flora. This is important since friendly bacteria can die within five days without a continuous supply of some form of lactic acid or lactose-like acidophilus. The immune system can also benefit from acidophilus, in that the intestinal putrefaction is eliminated, while better assimilation and digestion is attained.

Researchers have found natural antibiotic activity, refered to as "acidophilin," in some strains of Lactobacillus acidophilus. This antibiotic inhibited 27 different types of bacteria, studies showed, including strep, staph and salmonella. Lactobacillus acidophilus is often prescribed by doctors in conjunction with oral antibiotic treatment. This is because antibiotics work to kill the bad germs in the body, but they also kill many normal, indispensable bacteria that live in the intestines. These friendly bacteria help to digest food, produce essential vitamins and help to keep bowel function normal.

Women who are taking antibiotics should take a particular interest in acidophilus. Antibiotic therapy is also reported to destroy the protective acidophilus in the vagina, and women with vaginal infections are often encouraged to take some form of the bacteria. Guaranteed high-potency supplements of Lactobaccilus acidophilus has been found effective in treating Candidiasis, and has been shown to restore the beneficial acid intestinal environment. Vaginal or rectal application of acidophilus in a yogurt base has also been effective.

Osteoporosis is becoming a major cause of injury, particularly among postmenopausal women. Lack of dietary calcium is often a factor in the disease, and lactic bacteria has been shown to favorably affect calcium intake and absorption.

Lactobacillus acidophilus is also reported to be helpful in treating certain food allergies. It provides natural hydrochloric acid to aid digestion, and reduces the toxic wastes in the large intestine to help prevent allergies (with proper digestion of food, some allergies can be eliminated). Using acidophilus has additionally been reputed to help in the prevention of cancer of the colon, constipation, herpes simplex, hyperestrogenism (impaired estrogen metabolism), infection, and irritable bowel syndrome.

Acidophilus supplementation can also help to eliminate bad breath (caused by intestinal putrefaction), constipation, and foul-smelling flatulence, and is said to aid in the treatment of acne or other skin problems. Acidophilus can be a good traveling companion when going to a foreign land, in that it helps in preventing diarrhea. Studies have also shown that lactobacillus added to milk helped to lower cholesterol levels.

(Sources: *Nutritional Influences on Illness*, Melvyn R. Werbach, M.D., Keats Publishing Inc., 1988; *Earl Mindell's Vitamin Bible*, Warner Books, 1979; *Understanding Vitamins and Minerals*, Rodale Press Inc., 1984; and *The Friendly Bacteria*, William H. Lee, R.Ph., Ph.D., Keats Good Health Guide, 1988.)