

Special Interest Articles:

- Magnesium and Asthma
- Name That Food
- Vegans May Need Supplementation
- A Few Words About Magnesium
- Fish Oil and Weight Loss
- Lutein and DHA
- Vitamin K

Name that food:
Cinnamon bun mix
with frosting-

Milk Thistle and Liver Cancer

Flavonoids are plant pigments that act as antioxidants, protecting the plant from the oxidative stress of photosynthesis. They act as antioxidants for humans who eat the plants as well. Silibinin is a flavonoid found in milk thistle. Flavonoids from milk thistle, like silibinin and silymarin have been shown to protect the liver from alcohol, drugs and poisons and to promote healing and recovery in the liver. According to a study appearing in the *World Journal of Gastroenterology* (2007 Oct

28:13(40):5299-305), silibinin protects against liver cancer. It reduces cancer cell proliferation and suppresses cancer cell progression. It also increases the programmed death of cancer cells (called apoptosis). Earlier studies [*Current Medical Chemistry* (2007:14(3):315-18) and *Anticancer Research* (2006 Nov-Dec:26(6B):4457-98)] have shown silibinin to be useful against a number of cancers, including cancers of the prostate, breast, ovary, colon, lung and bladder.

People who Take Supplements are Healthier

According to a cross-sectional study appearing in *Nutrition Journal* (2007 Oct 24:6(1):30 e-published ahead of print), people who take multiple supplements have fewer health problems than those who do not. Researchers obtained information about 278 long term supplement users through questionnaires and physical examinations. They compared the health of the subjects to 800 people who did not take

supplements, or who used single nutrients sporadically.

The subjects taking multiple supplements were less likely to develop diabetes, high blood pressure or have high levels of inflammatory blood markers like homocysteine or C - reactive protein. Non-supplement takers tended to have higher triglyceride and LDL ("bad" cholesterol) levels than those who took multiple supplements.

Magnesium and Asthma

There is other research that suggests that magnesium deficiency may play a role in allergies. A study appearing in the *Journal of The American College of Nutrition* (1990;9(6):616-622) found that rats that were magnesium deficient had higher histamine levels than rats that were not deficient.

According to research appearing in the *European Journal of Clinical Nutrition* ((2007) 61, 54–60. doi:10.1038/sj.ejcn.1602475; published online 21 June 2006), magnesium supplementation may be of benefit to children with asthma. The double-blind, placebo-controlled study involved 37 subjects between the ages of 7 and 19. They were divided into two groups, one group receiving 300 mg of magnesium per day and the other group receiving a placebo. After two months a methacholine challenge test (PC20) was utilized to test bronchial reactivity, the ease in which the airways can be irritated. The group receiving the magnesium experienced improvement, the control group did not. The group receiving the magnesium also had an average of 28% fewer days of severe asthma and reduced their use of asthma

medication by 40%. As an added benefit, the supplemented group had a decreased reaction to allergens (as detected by skin tests).

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Name That Food

This is a little exercise in label reading. Look at the information taken from the label of a commonly consumed food and see if you can guess what it is:

COMPONENT 1: ENRICHED BLEACHED FLOUR, SUGAR, PARTIALLY HYDROGENATED SOYBEAN AND COTTONSEED OILS, LEAVENING (SODIUM BICARBONATE, MONOCALCIUM PHOSPHATE, SODIUM ALUMINUM PHOSPHATE), SALT, EMULSIFIER (PORPYLENE GLYCOL MONOESTER, MONO-DIGLYCERIDES, SODIUM STEAROYL LACTYLATE), SPICE, BETA CAROTENE,

NATURAL FLAVOR. **COMPONENT 2:** SUGAR, CORN SYRUP SOLIDS, SPICE, CANOLA OR SOYBEAN OIL, SALT, NATURAL FLAVOR, CARMEL COLOR. **COMPONENT 3:** SUGAR, WATER, MALTODEXTRIN, PARTIALLY HYDROGENATED SOYBEAN AND COTTONSEED OILS WITH MONO AND DIGLYCERIDES, MODIFIED CORN STARCH, NATURAL AND ARTIFICIAL FLAVORS, TITANIUM DIOXIDE, POTASSIUM SORBATE, SALT, GUAR GUM (ANSWER ON PAGE 1)

Vegans May Need Supplementation

While it is possible to get all necessary nutrients in a vegan diet, it is a little more difficult than it is for those who consume animal products. Vitamin B₁₂ is only found in animal products and it is a good idea for vegans to take B₁₂ supplements. It is possible to obtain B₁₂ from healthy bowel flora, but few have intestinal function that is healthy enough to supply adequate B₁₂. People who are deficient in vitamin B₁₂ commonly have problems with fatigue and short-term memory. If severe enough, B₁₂ deficiency can lead to pernicious anemia. According to research appearing in *Clinical Chemistry* (2001;47:1094-1101), vegans have poor antioxidant status, high homocysteine levels and poor antioxidant status when compared to non-vegetarians.

Vegans also tend to be deficient in vitamin A, zinc, and calcium. The omega-3 fatty acid, DHA (docosahexaenoic acid) is also difficult for vegans to obtain without supplementation. It is necessary to consume animal products, especially fish, to obtain DHA.

Vegan mothers who breast-feed should make sure that they are taking extra B₁₂. Vitamin B₁₂ is necessary for brain development and deficiency can result in growth retardation and brain atrophy in the newborn. This is supported by research appearing in the *European Journal of Pediatrics* (1991 Jan; 150 (3) 205-8) and the *Journal of Obstetrics, Gynecology*

and *Reproductive Biology* (2005 Oct;34(6):610-2). Similarly, the lack of DHA in a mother's diet will adversely affect the development of the child's nervous system. Recent research suggests that vitamin B₁₂ may be as important for preventing birth defects as folic acid.

Another issue for vegans is that it is difficult to get complete protein. By definition, a complete protein has all essential amino acids. Animal products tend to contain all of the essential amino acids. Vegetarian sources tend to be incomplete. You can get all of your essential amino acids in a vegan diet; it is just a little bit more difficult. Sometimes an amino acid supplement is a good idea.

Vitamin A is another common deficiency among vegetarians. You have to be careful when supplementing vitamin A, because it can be toxic. Also it is not a good idea to take vitamin A if you have had gout, or are an alcoholic who is still drinking. There is some research that suggests taking vitamin A may not be a good idea for pregnant women (beta carotene, a precursor to vitamin A, is not a problem). People who need vitamin A often have little bumps on the back of the arms, called hyperkeratosis folliculi. Also, hay fever sufferers who have itchy eyes often need vitamin A.

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A Few Words About Magnesium

Magnesium levels are low in diabetics and is associated with insulin resistance. In obese children, the connection between low magnesium and insulin resistance is seen in research appearing in *Diabetes Care* (May 2005;28(5):1175-1181). When type-2 diabetics are given magnesium, it helps decrease platelet aggregation. It ultimately may help protect against coronary artery blockage and heart attacks. It is also useful for bringing irregular heart beats under control. It has been postulated that magnesium deficiency may be responsible for heart damage experienced by endurance athletes. An article appearing in *Patient Care* (January 30, 1984;79-81), states that magnesium is useful for treating heart arrhythmias. Also, patients given magnesium after cardiac surgery have fewer problems with both arrhythmias and with uncontrolled high blood pressure from coronary vasospasm. An article appearing in the *Archives of Internal Medicine* (November 1992;152:2189-2196) also states that magnesium helps protect the heart.

Magnesium is valuable for treating preeclampsia. In a double-blind study, magnesium reduced blood pressure, not only during the infusion phase, but afterward. An article appearing in *Gynecologica Scandinavica* (1994;73:95-96) shows magnesium to have a beneficial effect on the mother's blood pressure and on the birth weight of the child. Several

studies have shown that magnesium may cause vasodilatation, and is probably the reason for magnesium's blood pressure lowering effect in pregnancy-induced hypertension and preeclampsia. In pregnancy-induced hypertension there is an inverse relationship between serum magnesium concentration and blood pressure. Studies have shown that magnesium infusion reduces blood pressure, increases cardiac output and decreases total peripheral resistance. Magnesium can be depleted with certain medications, like diuretics and is low in people who eat a highly refined diet. Magnesium deficiency is fairly common and should be considered with a variety of health problems.

Magnesium is the cofactor for over 300 chemical reactions in the body. Deficiency can cause a variety of health problems. According to an article appearing in *Pediatric Asthma, Allergy and Immunology*, (1993;7(4):211-215), symptoms of magnesium deficiency can include PMS and headaches. Other symptoms include high blood pressure, nervous irritability, hives, fibromyalgia and even heart problems. Mood swings and breast tenderness associated with the menstrual cycle are commonly seen in women who are magnesium deficient.

Fish Oil and Weight Loss

Research appearing in the *Journal of Nutrition* (Dec;137(12):2629-34) shows that fish oil promotes weight-loss. This supports earlier research that shows that fish oil lowers cholesterol and reduces the tendency toward obesity. The researchers divided mice bred to be obesity prone into two groups. They fed the mice a high-fat diet, with one group receiving fish oil, the other acting as a control. The group

receiving the fish oil gained significantly less weight. In a separate experiment, the researchers found that fish oil increased the activity of genes related to lipid metabolism. "...upregulation of intestinal lipid metabolism is associated with the anti-obesity effect of fish oil," according to the researchers.

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Lutein and DHA Help Prevent Macular Degeneration

The bioflavonoid, lutein and the omega-3 fatty acid, DHA (docosahexaenoic acid) may have a protective effect on the eye, possibly preventing age-related macular degeneration. Bioflavonoids, like lutein, are antioxidants derived from plants.

Macular degeneration affects more than 10 million Americans. It is an incurable eye disease and that it is the leading cause of blindness for those aged 55 and older. As people age the chances for developing eye diseases increase dramatically. Macular degeneration is caused by the deterioration of the central portion of the retina, the inside back layer of the eye that records the images we see and sends them via the optic nerve from the eye to the brain. The retina's central portion, known as the macula, is responsible for focusing central vision in the eye, and it controls our ability to

read, drive a car, recognize faces or colors, and see objects in fine detail.

A study, published in the *American Journal of Clinical Nutrition* (2008 May;87(5):1521-9) showed that lutein and DHA may improve macular pigment optical density. The subjects of the study were 49 women between the ages of 60 and 80. They were given either DHA (800 mg/day), lutein (12 mg/day), a combination of lutein and DHA or a placebo. Both lutein and DHA supplementation increased pigment density. The lutein increased it in the macula and the DHA increased it in other areas of the eye. The increase in pigment density indicates that the supplements may help protect from macular degeneration.

Vitamin K

We are indeed much more than what we eat, but what we eat can nevertheless help us to be much more than what we are.—*Adelle Davis*

Vitamin K1 is found in green leafy vegetables. Vitamin K2 (menaquinone) is a little harder to obtain from the diet; it is found in egg yolks, organ meats and natto (a fermented soy product commonly consumed in Japan, which is very high in menaquinone). People living in areas of Japan where natto is consumed have very high levels of K2.

Vitamin K2 is important for both bone and cardiovascular health, as it is involved with regulating calcium. Vitamin K dependent proteins (like matrix Gla-protein) can inhibit arterial calcification. Low vitamin K levels are associated with a risk for atherosclerosis and heart disease, according to a study appearing in the *Journal of Nutrition* (134:3100-3105, November 2004) involved 4807 subjects with no history of myocardial infarction at baseline (1990–1993) who were followed until January 1, 2000. Intake of vitamin K2 was inversely related to the incidence of heart disease. Those consuming the most vitamin

K had a 57% reduction in death from heart disease when compared to those with low vitamin K consumption.

Vitamin K2 is important for bone strength, helping to prevent osteoporosis and fractures. A two-year study appearing in the *Journal of Bone and Mineral Research* (2000 Mar;15(3):515-21) looked at the effect vitamin K2 has on bone strength. The subjects of the study were 241 patients with osteoporosis. They were divided into two groups, with one group receiving 45 mg/day of vitamin K2 and the other group acting as a control. The control group had a higher incidence of fractures and lower bone density than the group receiving the vitamin K supplementation. Vitamin K has even outperformed one of the osteoporosis drugs (etidronate). In research appearing in *Yonsei Medical Journal* (2003 Oct 30;44(5):751-6), women taking 45 mg/day of vitamin K2 had a lower fracture rate than those taking etidronate.

