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Supplements of the Herb *Ginkgo biloba* Slow the Progression of Senility, Alzheimer's

The herb *Ginkgo biloba* has long been recommended to increase blood flow to the brain and to improve memory. A study, published in the *Journal of the American Medical Association*, recently reported that it can slow the progression of Alzheimer's and senility caused by strokes.

Pierre L. LeBars, MD, PhD, of the New York Institute for Medical Research, Tarrytown, found that an extract of ginkgo moderately increased cognitive performance and social functioning in patients suffering from dementia.

The ginkgo extract, known as EGb 761, is used in Germany as a prescription drug for the treatment of Alzheimer's disease. (Essentially the same product is sold over-the-counter as ginkgo extract in U.S. health food stores.) It is believed to work as an antioxidant that scavenges destructive molecules known as free radicals. Some studies, however, have found that ginkgo acts as a cerebro-vasodilator, increasing blood circulation in the brain.

LeBars and his colleagues compared the effects of EGb 761 to a placebo in a year-long controlled study. About half the patients received 40 mg of EGb 761 three times daily, whereas the other half got a placebo. The extract consists of 24 percent ginkgo-flavone glycosides and 6 percent terpenelactones (3.1 percent ginkgolides A, B, and C and 2.9 percent bilobalide). Changes in the Alzheimer's and stroke patients were measured using several standard tests.

Overall, twice as many patients improved and only one-half deteriorated in the ginkgo group compared with the placebo group. It took six months for the effects to become noticeable.

Thinking processes improved slightly among patients taking ginkgo. Twenty-seven percent of the patients who took EGb 761 for at least one-half year had a four-point improvement in a 70-point test to evaluate thinking and language ability. Only 14 percent of those taking the placebo had a comparable improvement.

On a test designed to evaluate daily living and social behavior, 37 percent of the patients taking EGb 761 improved, compared with only 23 percent of those getting a placebo.

"EGb was safe and appears capable of stabilizing and, in a substantial number of cases, improving the

cognitive performance and the social function of demented patients for 6 months to one year," wrote DeBars and his colleagues.

Reference: LeBars PL, Katz MM, Berman N, et al., "A placebo-controlled, double-blind randomized trial of an extract of *Ginkgo biloba* for dementia," *JAMA*, 1997;278:1327-32. □

Infertile Men with DNA-Damaged Sperm Respond to Antioxidants

Sperm from infertile men have high levels of damage to deoxyribonucleic acid (DNA). But according to a recent study, supplemental antioxidants can reduce this damage and increase the likelihood of fertilization.

Hideya Kodama, MD, PhD, of Akita University, Japan, found that infertile men were more likely than fertile men to have very high levels of a compound, 8-hydroxy-2'-deoxyguanosine, created by free radical damage to DNA.

The infertile men had lower sperm concentrations, poor sperm motility (movement), and higher levels of deformed sperm in their semen than did their fertile counterparts. The 19 infertile men had low levels of vitamin E and undetectable levels of vitamin C in their blood serum. They also had high levels of lipid peroxidation in their blood, a possible marker of damage to the membranes of their sperm.

Kodama gave 14 of the infertile men an antioxidant supplement containing 200 mg of vitamin E, 200 mg of vitamin C, and 400 mg of glutathione daily for two months.

After supplementation, vitamin E and C blood levels increased in the men, and levels of lipid peroxidation decreased. For most of the men, levels of 8-hydroxy-2'-deoxyguanosine also decreased. At the same time, sperm concentrations increased significantly, and sperm motility increased slightly. The number of deformed sperm decreased as well.

Wives of two of the men conceived normally during a six-month follow-up study.

Reference: Kodama H, Yamaguchi R, Fukuda J, et al., "Increased oxidative deoxyribonucleic acid damage in the spermatozoa of infertile male patients," *Fertility and Sterility*, 1997;68:519-24. □

Research summaries continue on next page

Fruit Consumption Linked to Healthier Lungs in Children

Children who eat a couple pieces of fruit each day have healthier lungs than those who don't, according to a study conducted in England and Wales.

Researchers measured the ability to force air out of the lungs, known technically as forced expiratory volume in one second (FEV1), in 2,650 children ages 8-11. "FEV1 was positively associated with the frequency of fresh fruit consumption," Dr. Derek G. Cook wrote in *Thorax*.

Children who ate fruit regularly were able to breathe out approximately 4.3 percent more air compared with those who ate no fruit at all.

There was a higher prevalence of wheezing among children who never ate fruit, and children with a history of wheezing appeared to benefit the most from eating fruit.

Cook and his colleagues also found an association between salads and green vegetables and lung function, but it was not as strong as with fruit. Conversely, consumption of processed meat was associated with slightly poorer lung function. Cook concluded that fruits and vegetables can be of benefit to children who wheeze.

Cook also measured vitamin C blood levels in 278 of the children, but found no relationship between the vitamin and lung function. Other studies have shown that vitamin C intake does influence lung function.

Reference: Cook DG, Carey IM, Whincup PH, et al., "Effect of fresh fruit consumption on lung function and wheeze in children," *Thorax*, 1997;52:628-33. □

"Bitter-Taste" Genes Can Steer People Away from Healthy Foods

Dietitians urge people to get their vitamins and minerals from fruits and vegetables, instead of supplements. But studies have shown that only 9 to 32 percent of Americans regularly eat these foods.

The reason, it turns out, may be genetic. Large numbers of people apparently inherit "bitter-taste" genes that make fruits and vegetables taste bad.

"The bitter taste of many vegetables and fruit is aversive to some consumers, particularly children," wrote Adam Drewnowski, PhD, in the *American Journal of Clinical Nutrition*. "Low acceptance of bitter cruciferous vegetables and bitter citrus fruit may prevent some consumers from adopting diets consistent with dietary guidelines..."

In a recent study, Drewnowski, of the University of Michigan, Ann Arbor, tested the responses of 123 women to 6-n-propylthiouracil (Prop), a bitter-tasting compound found in the flavonoid naringin. Grapefruit juice is rich in naringin, which has anticancer properties.

He found that 40 percent of the women could taste Prop and naringin, and 28 percent were "supertasters" who disliked naringin and found grapefruit juice bitter. Thirty-two percent of women did not find the substances bitter.

Bitter-taste genes, wrote Drewnowski, "may in some cases limit the success of nutrition education programs and prove a barrier to existing dietary intervention studies."

Reference: Drewnowski A, Henderson SA, Shore AB, "Taste responses to naringin, a flavonoid, and the acceptance of grapefruit juice are related to genetic sensitivity to 6-n-propylthiouracil," *American Journal of Clinical Nutrition*, 1997;66:391-7. □

Vitamin E May Protect Against Parkinson's Disease

Vitamin E, recently found to slow the progression of Alzheimer's disease, might help prevent another neurological disease: Parkinson's.

In a study of 5,342 people in the Netherlands, researchers found the risk of Parkinson's disease went up as vitamin E consumption went down.

The vitamin, researchers suggested, protects brain cells from free radical damage. Another nutrient, beta-carotene, might also be of benefit, but the findings were not as clearcut as they were for vitamin E, according to Maarten C. de Rijk, MD, and his colleagues at the Erasmus University Medical Schools, Rotterdam.

Reference: de Rijk MC, Breteler MMB, den Breeijen JH, et al., "Dietary antioxidants and Parkinson disease," *Archives of Neurology*, 1997;54:762-5. □

Long-Term Vitamin C Supplements Reduce Risk of Cataracts

Taking moderately high doses of vitamin C supplements for more than 10 years can dramatically reduce the risk of developing cataracts, according to a study of 247 women between 56-71 years old. Cataracts are an opacity of the lens that obscures vision.

The study, directed by Allen Taylor, PhD, of the USDA Human Nutrition Research Center on Aging at Tufts University, focused on Boston-area women enrolled in the ongoing Nurses Health Study.

Taylor, who has been studying the roles of free radicals and antioxidants in cataracts for about a decade, found that women taking vitamin C supplements were 77 percent less likely to develop mild cataracts and 83 percent less likely to develop moderate cataracts in any part of the lens.

Most of the women using vitamin C supplements took more than 400 mg daily, and many took more than 700 mg daily, according to Taylor. On average, women not taking vitamin C supplement did obtain about 130

mg of the vitamin through foods. While this amount is more than twice the Recommended Dietary Allowance for vitamin C, it did not protect against cataracts.

"These data, together with results from experimental studies and previous epidemiological findings for cataract extraction, suggest that long-term consumption of high amounts of vitamin C (in the present case primarily through dietary supplements) may substantially reduce the development of age-related lens opacities," he wrote in the Oct. 1997 *American Journal of Clinical Nutrition*.

In analyzing his data, Taylor accounted for various factors that increase the risk of cataracts. They included diabetes, smoking, summertime sunlight exposure, aspirin use, and postmenopausal hormone therapy.

Reference: Jacques PF, Taylor A, Hankinson SF, et al., "Long-term vitamin C supplement use and prevalence of early age-related lens opacities," *American Journal of Clinical Nutrition*, 1997;66:911-6. □

Selenium Deficiency Increases Risk of Death from AIDS

Patients with HIV infections suffer widespread nutrient deficiencies, but low levels of one nutrient in particular—selenium—sharply increase the risk of death from AIDS.

In a three and one-half year study, Marianna K. Baum, PhD, of the University of Miami, found nutrient deficiencies to be common among a group of 125 HIV-infected patients. Most of the deficiencies existed before the patients developed any obvious symptoms of HIV infection or AIDS.

"Decreased plasma levels of zinc and vitamins B6, B12, A, and E are particularly widespread and appear to be functionally relevant in maintaining the integrity of immune responses," wrote Baum in the *Journal of Acquired Immune Deficiency Syndromes and Human Retrovirology*.

Although a lack of these nutrients interferes with a person's ability to fight infection in general, a deficiency of selenium increased the risk of death from HIV by 20 times.

"Our findings demonstrate that only a deficiency of selenium, an essential trace element that is part of the antioxidant defense system, was profoundly associated with decreased survival in HIV-1 disease," Baum wrote.

In a separate report in the same issue, E. Will Taylor, PhD, of the University of Georgia, Athens, described new genetic evidence that HIV infection dramatically increased the body's selenium requirements. To reproduce, the virus creates a number of selenium-containing proteins and, in the process, steals selenium from the immune system. A lack of selenium limits the body's production of glutathione peroxidase, an important antioxidant enzyme, and affects the body's ability to fight the virus.

References: Baum MK, Shor-Posner G, Lai S, et al., "High risk of HIV-related mortality is associated with selenium deficiency," *J AIDS and Human Retrovirology*, 1997;15:370-4; Taylor EW, Bhat A, Nadimpalli R, "HIV-1 encodes a sequence overlapping env gp41 with highly significant similarity to selenium-dependent glutathione peroxidases," *J AIDS and Human Retrovirology*, 1997;15:393-4. □

Beta-Carotene, Other Carotenoids Prevent DNA Damage

Two studies have shown that beta-carotene and other carotenoids can prevent breaks in strands of deoxyribonucleic acid (DNA). Such breaks, often caused by free radicals, are generally considered the cause of most cancers.

In a study conducted at the Federal Research Centre for Nutrition, Karlsruhe, Germany, researchers measured free radical oxidation and DNA breaks in lymph cells from 23 healthy men while eating their regular diet and after being fed a low-carotenoid diet. The men were given beverages made from carrots, tomatoes, and spinach for two weeks, and then their DNA breaks and oxidation were again measured.

After being given each of the vegetable-based drinks for two weeks, the number of DNA breaks decreased significantly. Only the carrot drink, however, lowered the oxidation of DNA.

Carrots are high in beta-carotene and alpha-carotene, tomatoes in lycopene, and spinach in lutein.

In a separate study, using laboratory rats, researchers found that beta-carotene prevented chemically induced DNA breaks and other types of DNA damage.

References: Pool-Zobel BL, Bub A, Muller H, et al., "Consumption of vegetables reduces genetic damage in humans: first results of a human intervention trial with carotenoid-rich foods," *Carcinogenesis*, 1997;18:1847-1850; Sarkar A, Basak R, Bishayee A, et al., "B-carotene inhibits rat liver chromosomal aberrations and DNA chain break after a single injection of diethylnitrosamine," *British Journal of Cancer*, 1997;76:855-861. □

Vitamin B1 Deficiency Common

Large numbers of people over the age of 65 are deficient in vitamin B1 (thiamine), according to a study by New Zealand researchers.

Dr. Tim J. Wilkinson found that 76 (34 percent) of 222 people had below normal levels of B1. A second test, taken three months later, found 35 (16 percent) of the people continued to have "persistently low" B1 levels.

The subjects were subsequently divided into groups that received 10 mg of B1 daily or a placebo. People who had persistently low B1 levels benefited the most from

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Quick Reviews of Recent Research

• Chromium picolinate helps diabetics

In a study of 180 Type II diabetics, USDA researchers found that daily intake of 1,000 mcg of chromium picolinate resulted in significant reductions in fasting blood sugar and fasting insulin. Furthermore, after a glucose challenge, glucose and insulin levels did not rise as high as they did in a placebo group, indicating improved glucose control. Chromium also reduced levels of cholesterol and glycated hemoglobin, a marker of diabetic control (and cell aging). Patients taking 200 mcg of chromium picolinate daily gained benefits, but they were generally not as significant as those among patients taking higher dosages. Researchers noted the benefits at two and four months after diabetics started taking the supplements.

Anderson RA, et al., *Diabetes*, 1997;46:1786-1791.

• Vitamins, sunlight improve vitiligo

Vitiligo is a skin condition, most common in blacks, characterized by pale white patches of skin. In a two-year study of 100 patients with vitiligo, the use of oral vitamin B12 and folic acid combined with sun exposure promoted normal skin repigmentation. The combination worked better than either the vitamins or sun exposure alone.

Julin L and Olsson MJ, *Acta Dermato-Venereologica*, 1997;77:460-462.

• Lycopene good for the heart

Researchers analyzed levels of lycopene and other fat-soluble nutrients stored in body fat and their relationship to the risk of heart attack. Patients with the highest stores of lycopene were 48 percent less likely to suffer a heart attack.

Kohlmeier L, et al., *Am J Epidemiology*, 1997;146:1-9.

• Trans fats bad for the heart

In a study of 80,000 nurses, women consuming large amounts of trans fats (also called trans fatty acids) and saturated fats were far more likely to suffer a heart attack, compared with women eating large amounts of polyunsaturated and monounsaturated fatty acids. Trans fats are used to make french fries and other deep-fried foods, stick margarine, and commercial baked goods. The researchers calculated that eating more polyunsaturated and monounsaturated fats would lower the risk of heart attacks.

Hu FB, et al., *NEJM*, 1997;337:1491-1499.

Vitamin B1 Deficiency...

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supplements. They also had improvements in energy levels and sleep patterns and decreases in blood pressure and weight.

Reference: Wilkinson TJ, Hanger HC, Elmslie J, "The response to treatment of subclinical thiamine deficiency in the elderly," *Am J Clin Nutr*, 1997;66:925-8. □

• Omega-3 fish oils lower cancer risk

Although polyunsaturated fats may lower the risk of heart disease, some types may increase or decrease the risk of cancer. Diets high in linoleic acid, found in vegetable oils, may promote the growth of breast and prostate cancer. In contrast, the omega-3 fatty acids, found in fish oils, suppress the growth of these cancers. Omega-9 fatty acids (which include oleic acid, found in olive oil) also appear to protect against cancer.

Rose DP, *Am J Clin Nutr*, 1997;66:998S-1003S.

• Cholesterol-lowering drugs increase oxidation

Researchers gave lovastatin, a popular cholesterol-lowering drug, to 27 men with coronary heart disease and elevated cholesterol levels. The drug resulted in impressive decreases in the patients' cholesterol and triglyceride levels. However, levels of CoQ10 and vitamin E in the low-density lipoprotein (LDL) form of cholesterol decreased by 47 and 42 percent, respectively. As a result, LDL oxidized faster than normal. Oxidized, or free-radical damaged, LDL is considered an early step in the development of coronary heart disease.

Palomaki A, et al., *FEBS Letters*, 1997; 410:254-258.

• Coenzyme Q10 may help in post-polio syndrome

Post-polio syndrome is characterized by a recurrence of muscular problems and fatigue 20-30 years after the initial, acute polio infection and paralysis. In a small study of middle-age post-polio patients and healthy subjects, researchers found that 100 mg of CoQ10 daily for six months increased muscle-energy metabolism.

Mizuno M, et al., *Molec Aspects Med*, 1997; 18 (Suppl.):S291-S298.

• N-acetylcysteine (NAC) slows brain cell aging

The accumulation of oxidized protein contributes to the aging of brain cells. In a study with mice, supplements of N-acetylcysteine resulted in a significant decrease in brain-cell levels of protein carbonyl, a marker of oxidation, compared with mice not given NAC.

Banaochoa MM, et al., *Brain Research*, 1997;762: 256-258.

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