

The Nutrition Reporter™

© Jack Challem October 2002 Vol 13 No 10

The independent newsletter that reports vitamin, mineral, and food therapies

Major Studies Find that Vitamin E Protects the Brain, Reduces Alzheimer's Disease Risk

Several years ago, researchers reported that vitamin E supplements slowed the progression of late-stage Alzheimer's disease. Four new studies, published in major medical journals, have found that vitamin E, from supplements or foods, can reduce the risk of developing Alzheimer's disease.

Some 4 million Americans currently have Alzheimer's disease, and an estimated 360,000 new cases will be diagnosed this year. The disease's prevalence is expected to increase sharply over the next 20 years, due largely to aging baby boomers.

Two reports by Martha Clare Morris, ScD, of the Rush-Presbyterian-St. Luke's Medical Center, Chicago, highlighted the protective effectiveness of vitamin E. In one study, the health of 815 elderly men and women was tracked for an average of four years. During this time, subjects consuming the largest amounts of vitamin E were 70 percent less likely to develop Alzheimer's disease, compared with people who ate little vitamin E. People with the APOE-E4 gene, which other studies have linked to Alzheimer's disease, appeared to benefit the most from vitamin E.

In a separate study, Morris analyzed the diets and supplement habits of 2,889 people, ages 65 to 102. The subjects were given four standard tests to assess their cognitive function, including memory, at the beginning of the study and after three years. In this case, subjects who consumed the most vitamin E, from supplements or foods, had a 36 percent reduction in cognitive decline, compared with people who consumed little vitamin E. People getting large amounts of vitamin E from foods alone had a 32 percent lower reduction of cognitive decline. Based on the tests, people taking or eating the most vitamin E had mental function eight to nine years younger than those who consumed little of the vitamin.

In a Dutch study of 5,395 people, Marianne J. Engelhart, MD, of the Erasmus Medical Center, Rotterdam, found that high dietary intake of vitamin E reduced the risk of Alzheimer's disease by 18 percent overall. However, high vitamin E intake

among smokers reduced their risk of Alzheimer's disease by 42 percent.

Finally Rosa M. Ortega, PhD, of Universidad Complutense de Madrid, Spain, and her colleagues analyzed the diets of 34 men and 86 elderly women and also tested their cognitive performance. People who consumed the most amount of vitamin E made the fewest errors when being tested. In contrast, subjects with the lowest vitamin E intake – less than half of the recommended dietary intake – made the most errors.

But as a group, the subjects might have done even better. According to Ortega, more than 95 percent of her subjects had vitamin E intake below recommended amounts. She and her colleagues noted that "it is clear that the vitamin E nutriture of this population of elderly people could be improved."

References: Morris MC, Evans DA, Bienias JL, et al. Dietary intake of antioxidant nutrients and the risk of incident Alzheimer's disease in a biracial community study. *JAMA*, 2002;287:3230-3237. Morris MC, Evans DA, Bienias JL, et al. Vitamin E and cognitive decline in older persons. *Archives of Neurology*, 2002;59:1125-1132. Engelhart MJ, Geerlings MI, Ruitenberg A, et al. Dietary intake of antioxidants and risk of Alzheimer's disease. *JAMA*, 2002;287:3223-3229. Ortega RM, Requejo AM, Lopez-Sobaler AM, et al. Cognitive function in elderly people is influenced by vitamin E status. *Journal of Nutrition*, 2002;132:22065-2068. □

Extended-Release Niacin Improves Lipids, Reduces Heart Disease Risk

Almost 50 years ago, Abram Hoffer, MD, PhD, and his colleagues reported that the niacin form of vitamin B3 could significantly reduce blood cholesterol levels. Though statin-class cholesterol drugs are now commonly prescribed for lowering cholesterol levels, they pose serious risks – and are expensive.

Niacin remains an effective and inexpensive

Continues on next page

treatment for improving lipid profiles. However, all users must be warned about intense flushing and itching, which begins a few minutes after taking the supplement and lasts for about an hour. Niacinamide, another form of vitamin B3, does not cause flushing; nor does it alter blood lipids.

In the latest study, Scott M. Grundy, MD, PhD, of the University of Texas Southwestern Medical Center, Dallas, and his colleagues treated 148 patients who had both type 2 (adult-onset) diabetes and “dyslipidemia.” The dyslipidemia consisted of elevated “bad” low-density lipoprotein (LDL) cholesterol and triglyceride and low levels of the “good” high-density lipoprotein (HDL) cholesterol.

The treatment consisted of either 1,000 mg or 1,500 mg daily of an extended-release niacin supplement, or placebo, daily for 16 weeks. About half of the patients were also taking statins. Grundy was particularly interested in how niacin would affect glucose levels in the diabetic subjects.

In general, the higher dose of niacin produced better results. After 16 weeks, patients taking 1,500 mg daily of extended-release niacin had substantial improvements in their lipid profiles. Overall HDL levels rose 22 to 24 percent, LDL levels decreased by 7 percent, and triglyceride levels decreased by 28-36 percent. Among patients taking 1,000 mg of extended-release niacin, HDL increased 13-19 percent, triglyceride decreased by 5-8 percent, and LDL increased 5 percent.

Glycated hemoglobin (HbA_{1c}), a marker of average glucose levels over four to eight weeks, increased slightly among patients taking 1,500 mg of niacin daily. However, Grundy and his colleagues noted that this slight increase was easily controlled by adjusting other medications.

The niacin supplement used in the study was Niaspan, available on prescription.

Reference: Grundy SM, Vega GL, McGovern ME, et al. Efficacy, safety, and tolerability of once-daily niacin for the treatment of dyslipidemia associated with type 2 diabetes. *Archives of Internal Medicine*, 2002;162:1568-1576. □

B Vitamins Lower Homocysteine –and Reduce Problems After Angioplasty

Elevated blood levels of homocysteine are a major risk factor for heart disease and stroke. Although homocysteine levels can be lowered with some of the B vitamins, some skeptical researchers have questioned whether B vitamins will reduce the risk of cardiovascular disease.

A study recently published in the *Journal of the American Medical Association* should answer the doubters: B-vitamin supplements significantly

reduced the risk of new heart disease, follow-up surgery, and death after patients underwent balloon angioplasty.

Guido Schnyder, MD, currently of the University of California Medical Center, San Diego, and his colleagues asked 553 patients to take either a homocysteine-lowering vitamin supplement or placebo for six months after undergoing angioplasty. The procedure uses a small inflatable balloon to widen narrowed arteries, but artery disease known as restenosis frequently develops afterwards.

The supplements provided 400 mcg of folic acid, 400 mcg of vitamin B12, and 10 mg of vitamin B6 daily for six months. Eleven months after the study began, and five months after supplementation ended, patients taking the vitamins were 32 percent less likely (compared with the placebo group) to suffer a heart attack, need repeat surgery, or die.

The patients’ improved survival was related chiefly to a lower rate of new disease in the treated artery. Their homocysteine levels also declined.

In a separate study, Kam S. Woo, MD, of the Prince of Wales Hospital, Hong Kong, asked 29 middle-age men and women with elevated homocysteine levels to take 10 mg (10,000 mcg) of folic acid daily for one year. Woo and his colleagues assessed their patients’ health based on their homocysteine levels and endothelial function. Endothelial function refers to blood vessel flexibility.

Overall, homocysteine levels declined by 12 percent, and endothelial function – a sign of heart health – improved by 20 percent.

References: Schnyder G, Roffi M, Flammer Y, et al. Effect of homocysteine-lowering therapy with folic acid, vitamin B12, and vitamin B6 on clinical outcome after percutaneous coronary intervention. *JAMA*, 2002;288:973-979. Woo KS, Chook P, Chan LLT, et al. Long-term improvement in homocysteine levels and arterial endothelial function after 1-year folic acid supplementation. *American Journal of Medicine*, 2002;112:535-539. □

Alpha-Lipoic Acid Benefits Patients with Burning-Mouth Syndrome

Burning-mouth syndrome leaves a person’s tongue, palate, and lips feeling as though they’ve been burned by a hot liquid. But typically, the condition has no obvious cause. Although it can occur in either men and women, it is most often diagnosed in postmenopausal women. And while it has often been attributed to psychological factors, it may actually be a type of neuropathy, or nerve disease.

In a recent study, Femiano Felice, MD, of the University of Medicine and Surgery, Napoli, Italy, and a colleague asked 42 women and 18 men with

burning mouth syndrome to take either 200 mg of alpha-lipoic acid or placebos three times daily for two months. Alpha-lipoic acid is an antioxidant long used to treat diabetic neuropathy in Europe.

Of the patients taking alpha-lipoic acid, 97 percent had some improvement, with 74 percent having a substantial improvement and 13 percent having a complete disappearance of symptoms. In the placebo group, only 40 percent had any improvement, and it was described as "slight."

When followed up a year later, 73 percent of the patients who had improved while taking alpha-lipoic acid were still feeling better. In contrast, those who had improved on the placebo deteriorated.

Reference: Femiano F, Scully C. Burning mouth syndrome (BMS): double blind controlled study of alpha-lipoic acid (thioctic acid) therapy. *Journal of Oral Pathology and Medicine*, 2002;31:267-269. □

Vitamin D Deficiency May Be Common Among Americans and Canadians

Two studies have found that vitamin D deficiency may be common among Americans and Canadians, whether young or elderly. The vitamin helps the body absorb calcium and regulate mineral levels in bone, and it may also protect against colon, prostate, and breast cancer.

In the first study, David A. Hanley, MD, and his colleagues at the University of Calgary, measured vitamin D levels in the blood of 188 men and women four times – every three months – over the course of a full year. All of the subjects were healthy residents of Western Canada.

Sixty-four of the subjects, or 34 percent, were seriously deficient in vitamin D during one of the four blood-sampling times. Remarkably, 182 of the subjects, or 97 percent, had low vitamin D levels during at least one sampling.

In the other study, Michael F. Holick, MD, PhD, and his colleagues at the Boston University School of Medicine measured vitamin D levels in young adult hospital employees, including physicians and medical students. Blood was taken from 165 subjects at the end of winter and from 142 subjects at the end of summer.

Not surprisingly, vitamin D levels were lower at the end of winter – but the prevalence of vitamin D deficiency was unexpected. Thirty percent of the young adults, age 17 to 35 years, were deficiency in vitamin D at the end of winter. Eleven percent were deficient at the end of summer.

"The majority of elderly patients in the United States and Europe have vitamin D insufficiency," Holick and his colleagues wrote. "Little is known about the prevalence of vitamin D insufficiency in

health young adults. We observed that 36 percent of young adults aged 18 to 29 years had vitamin D deficiency at the end of winter."

Normal vitamin D levels should be about 100 nmol/L (nanomoles per liter of blood) and no less than 80 nmol/L.

References: Rucker D, Allan JA, Rick GH, et al. Vitamin D insufficiency in a population of healthy western Canadians. *Canadian Medical Association Journal*, 2002;166:1517-1524. Tangpricha V, Pearce EN, Chen TC, et al. Vitamin D insufficiency among free-living healthy young adults. *American Journal of Medicine*, 2002;112:659-662. □

Vitamin E Supplements Lower Virus Concentrations in HIV-Positive Patients

Several years ago, a study at Tufts University found that subjects taking vitamin E supplements had a 30 percent lower incidence of colds and flus. A new study reports that vitamin E supplements can reduce viral loads and improve the ratio of immune cells in patients infected with the human immunodeficiency virus (HIV).

Patients with HIV risk developing deficiencies of vitamin E and other nutrients for a variety of reasons. The infection generates free radicals, which deplete antioxidant levels, and diarrhea often limits nutrient absorption. Some research has shown that HIV-infected patients require high potency supplements to achieve "normal" blood levels of some vitamins and minerals.

In the study, Celso Spada, MD, of the Universidade Federal de Santa Catarina, Brazil, and his colleagues treated 18 HIV-infected men and women. Half of the patients received anti-viral drugs, and the other half received anti-viral drugs plus 800 IU of vitamin E daily for two months.

By the end of the study, viral loads decreased significantly among patients taking vitamin E, but not among the other patients. The number of CD4 immune cells increased in both groups, but the number of CD8 immune cells declined to a greater extent in the vitamin E group – the effect being an improved ratio of CD4 to CD8 cells.

In addition, people taking vitamin E supplements benefited from greater numbers of red blood cells and higher levels of hemoglobin, also positive signs. These improvements may have been the result of better antioxidant protection of red blood cell membranes.

Reference: Spada C, Treitinger A, Reis M, et al. An evaluation of antiretroviral therapy associated with a-tocopherol supplementation in HIV-infected patients. *Clinical Chemistry and Laboratory Medicine*, 2002;40:456-459. □

Quick Reviews of Recent Research

• Flavonoids linked to reduced risk of death

Finnish researchers reported that people who consumed large amounts of specific flavonoids in foods had a lower risk of death and some diseases. A high intake of quercetin, found in apples and onions, was associated with an 8 percent lower risk of death from any cause. Quercetin and other flavonoids, such as those found in citrus fruit, were associated with substantial reductions in cardiovascular diseases, lung and prostate cancer, and asthma. It is likely that high flavonoid intake also reflected the health benefits of dietary fruits and vegetables.

Knekt P, et al. *American Journal of Clinical Nutrition*, 2002;76:560-568.

• Carotenoids may have anti-leukemia properties

Researchers cultured human leukemia cells in media containing one of several different types of carotenoids, with levels comparable to what would be found in the blood. Beta-carotene led to the destruction of leukemia cells, with the effect related to dosage and duration of exposure. Lycopene, lutein, cryptoxanthin, and zeaxanthin also exhibited anti-leukemia effect.

Muller K, et al. *Free Radical Research*, 2002;36:791-802.

• Red clover isoflavones ease hot flushes

Red clover is a rich source of isoflavones, a family of flavonoids that has weak estrogen-like effects. Some research has found that soy isoflavones can reduce hot flushes (flashes). Researchers asked 30 menopausal women to take either 80 mg of red clover extract or placebo daily for 12 weeks. During this time, hot flushes declined by 44 percent in the group taking red clover, but not in women taking placebos.

van de Weijer PHM, et al. *Maturitas*, 2002;42:187-193.

• Hawthorn benefits people with heart failure

Researchers asked 209 men and women with heart failure to take one of two dosages of hawthorn extract or placebo for 16 weeks. The patients' exercise tolerance was assessed by how long they were able to ride stationary exercise bicycles. People who had taken the higher dosage of hawthorn extract (1,800 mg daily) had significant improvements in exercise tolerance, compared with those taking a lower dosage (900 mg daily) or placebo. Hawthorn was also exceptionally safe. Only 1.4 percent of the patients taking the higher dosage of hawthorn complained of either dizziness and vertigo, compared with 10 percent of those taking placebos.

Tauchert M. *American Heart Journal*, 2002;143:910-915.

• Topical vitamin K may ease bruising

The use of laser treatments in cosmetic procedures can cause significant, though temporary, bruising to patients. Researchers asked 11 subjects to apply two creams – one with vitamin K and the other without – to each half of their faces for two weeks before laser treatment. Another 11 subjects were asked to apply the same creams for two weeks after laser treatment. Pretreatment with a vitamin K cream had no effect on bruising. However, the use of a vitamin K cream after treatment did reduce the severity of bruising.

Shah NS, et al. *Journal of the American Academy of Dermatology*, 2002;47:241-244.

• St. John's wort has anti-cancer properties

St. John's wort increases the activity of liver detoxification enzymes, speeding the breakdown of chemotherapeutic drugs. However, experiments have found that the herb might have some anti-cancer effects. Cell experiments found that St. John's wort inhibited the growth of leukemia and glioma cells. The herb also seemed to be light-sensitive, and exposure to light increased its anticancer properties.

Hostanska K, et al. *Pharmazie*, 2002;57:323-331.

• B vitamins benefit people with sickle-cell disease

People with sickle-cell disease have an inherited disorder in which red blood cells break down in 10-20 days instead of a normal 120 days. As a consequence, they are prone to anemia and cardiovascular disease. In a study of 21 sickle-cell patients, ages 7-16 years, researchers found that modest amounts of folic acid (700 mcg), vitamin B6 (6 mg) and vitamin B12 (4.2-6 mcg) lowered blood levels of homocysteine and reduced the risk of blood-vessel damage. Supplements reduced the subjects homocysteine levels to an ideal 5.9 mmol/L.

van der Dijs FPL, et al. *American Journal of Hematology*, 2002;69:239-246.

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Post Office Box 30246 • Tucson AZ 85751-0246 USA

Editor and Publisher: **Jack Challem**
Copy Editor: **Mary E. Larsen**

Medical and Scientific Advisors:

Richard P. Huemer, MD Lancaster, California

Ralph K. Campbell, MD Polson, Montana • **Peter Langsjoen, MD** Tyler, Texas
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