

The Nutrition Reporter™

© Jack Challem June 2007 Vol 18 No 6



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

Adequate Selenium, an Essential Mineral, Keeps Body and Brain in Good Health

Selenium is commonly recognized for its many roles in maintaining our physical health, such as fighting infections, reducing inflammation, preventing some types of cancer, as well as for being part of the glutathione peroxidase molecule, one of the body's most powerful antioxidants. Two recent studies suggest that selenium might also help people stay mentally sharp as they age.

According to N. Tasnime Akbaraly, MD, of the University of Montpellier, France, selenium is needed for the production of several brain proteins, called selenoproteins. One of these proteins, called selenoprotein P, protects the brain against a particularly hazardous type of free radical.

In her study, Akbaraly and her colleagues investigated whether low selenium levels were associated with poor thinking processes and other aspects of cognition. They studied 1,389 men and women, ages 60 to 70, over nine years.

After controlling for variables, Akbaraly found that cognitive function paralleled blood levels of selenium. Among people whose selenium levels declined over the nine-year study, the most serious decreases in cognitive function occurred among people with the lowest levels of selenium.

Even among people who had increases in selenium levels, cognition closely tracked with their selenium levels.

In the other study, Sujuan Gao, PhD, of the Indiana University School of Medicine, Indianapolis, and her colleagues studied 2,000 elderly Chinese subjects, most of whom had spent their entire lives in the same village and presumably ate the same diet. The subjects underwent seven cognitive tests, and Gao analyzed selenium levels in their nails.

Gao wrote that "selenium had a consistent, dose-response relation with cognitive performance, such that higher selenium levels were associated with better cognition."

Like Akbaraly, Gao found that low selenium levels were strongly related to with lower cognitive

scores in all but one of the cognitive tests. She concluded that "a lifelong low selenium level is associated with lower cognitive function."

Most people need only 200 to 300 mcg of selenium daily. Brazil nuts are the richest natural source of the mineral.

References: Akbaraly NT, Hininger-Favier I, Carriere I, et al. Plasma selenium over time and cognitive decline in the elderly. *Epidemiology*, 2007;18:52-58. Gao S, Jin Y, Hall KS, et al. Selenium level and cognitive function in rural elderly Chinese. *American Journal of Epidemiology*, 2007;165:955-965. □

Perspectives...

Our Nutritional Tipping Points

Each of us, as individuals, has our nutritional tipping point. And societies as a whole also have their nutritional tipping points as well.

The term "tipping point" comes from the field of epidemiology. It originally referred to when epidemics rapidly accelerated, or reached a tipping point at which large numbers of people were affected. Malcolm Gladwell writes about such phenomena in his book, *The Tipping Point*.

Thirty years ago, when I first met with Abram Hoffer, MD, PhD, we talked a little about how poor nutrition might set the stage for a societal catastrophe. With great foresight, he said that a tipping point would come when our society has more sick people than healthy people to take care of them. That situation could lead to social collapse.

People often reach a tipping point in their moods, such as when they are overwhelmed by stress or explode in anger. There are also tipping points in the progression of diseases, such as when cardiovascular disease reaches a crescendo known as a heart attack or when a tumor becomes clinically recognizable.

People seem to function – perhaps get by – even though their nutritional intake may be marginal.

Continues on next page

They may not feel their best, a sign of less than optimal nutritional biochemistry. Many studies refer to their subjects as being “apparently healthy” because they have no overt signs of serious disease. But “apparently healthy” often means that they have not yet reached their nutritional tipping point.

Fatigue, one of the most common of all symptoms, may be a sign that we’ve hit our tipping point for poor nutrition and too much stress. We end up having too many things to do, but without the nutritional support to fortify us. Prediabetes is another tipping point, as would be any fulminant disease. The question is: what is your tipping point, and what are you doing to avoid it? – JC

Magnesium Supplements Can Increase Bone Mass in Adolescent Girls

Young girls who don’t get enough magnesium in their diets can strengthen their bones with daily magnesium supplements. Magnesium is incorporated into bone along with calcium and also increases vitamin D activity.

Thomas O. Carpenter, MD, of the Yale University School of Medicine, and his colleagues first asked 120 girls, ages eight to 14 years, to keep dietary diaries. The researchers subsequently asked the girls with relatively low magnesium intake to participate in a supplement study.

About half of the girls were asked to take 150 mg of magnesium twice daily for one year, and the others received placebos.

Forty-four of the girls completed the study, and those who took magnesium supplements had higher bone-mineral content and bone-mineral density. The greatest increases in bone minerals occurred in the hips and neck, but slight increases were also evident in the spine.

Reference: Carpenter TO, DeLucia MC, Zhang H, et al. A randomized controlled study of effects of dietary magnesium oxide supplementation on bone mineral content in healthy girls. *Journal of Clinical Endocrinology and Metabolism*, 2006;91:4866-4872. □

More Evidence Points to Importance of Vitamin D in Preventing Falls

The latest medical thinking is that weak muscles, not bones, set the stage for falls and then fractures. Two new studies point to the pivotal role of vitamin D in preventing falls among the elderly.

Vitamin D is needed to make both bone and muscle. In bone, it’s essential for the normal use of calcium. In muscle, it’s required for protein synthesis – important because muscle is made of protein. Muscle weakness is a sign of vitamin D deficiency.

In the first study, Kerry E. Broe, MPH, of the

Institute for Aging Research, Hebrew SeniorLife, Boston, and her colleagues gave 124 nursing home residents 200 IU, 400 IU, 600 IU, or 800 IU of vitamin D or placebos daily for five months.

People taking 800 IU of vitamin D daily had 72 percent fewer falls, compared with those who took placebos. The lower dosages of vitamin D were no better than placebos.

“Adequate vitamin D supplementation in elderly nursing home residents could reduce the number of falls experienced by this high falls risk group,” wrote Broe.

In the other study, Marieke B. Snijder, PhD, of Vrije University, Amstcrdam, The Netherlands, and her colleagues, tracked 1,231 men and women for one year. All of the subjects were 65 years of age or older.

One-third of the subjects fell at least once, and just over one-tenth fell more than once during the study. People with the lowest blood levels of vitamin D were 78 percent more likely to fall, compared with those who had the highest levels of vitamin D.

Men and women ages 65 to 75 years were five times more likely to fall at least twice if they had low levels of vitamin D.

References: Broe KE, Chen TC, Weinberg J, et al. A higher dose of vitamin D reduces the risk of falls in nursing home residents: a randomized, multiple-dose study. *Journal of the American Geriatrics Society*, 2007;55:234-239. Snijder MB, van Schoor NM, Pluijm SMF, et al. Vitamin D status in relation to one-year risk of recurrent falling in older men and women. *Journal of Clinical Endocrinology and Metabolism*, 2006;91:2980-2985. □

Researchers Find Low Levels of Vitamin B12 Very Common Among Elderly

About one-third of seniors suffer from atrophic gastritis, which can inhibit the absorption of vitamin B12. In a study of older adults from Finland, researchers found low levels of vitamin B12 to be extremely common. Their findings may be relevant to other elderly populations.

Saila Loikas, MD, of the University of Turku, and colleagues studied 1,048 men and women ranging from 65 to 100 years of age. Twenty-seven of the subjects – 2.6 percent – were excluded from further study because they had previously been reported deficient in vitamin B12.

Using a variety of blood tests, Loikas found vitamin B12 deficiency in 6.1 percent of the remaining subjects, as well as borderline vitamin B12 deficiency in 32 percent. Men were more likely than women to be deficient, as were people of either sex who consumed few dairy foods. Conventional signs of vitamin B12 deficiency, such as anemia and

macrocytosis, did not predict deficiency.

“Vitamin B12 deficiency seems to be markedly under-diagnosed.... This suggests that, in the current clinical practice, only overt signs and symptoms trigger laboratory testing for vitamin B12 deficiency. Evidently, routine screening would result in early diagnosis and reduce the related disability,” wrote Loikas.

Reference: Loikas S, Koskinen P, Irjala K, et al. Vitamin B12 deficiency in the aged: a population-based study. *Age and Aging*, 2007;36:177-183. □

Intravenous Vitamin C Improves Quality of Life In Terminal Cancer Patients

Moderately large doses of intravenous vitamin C can quickly and significantly improve the quality of life – and reduce pain – in terminal cancer patients, Korean physicians have reported.

The use of intravenous vitamin C in cancer treatment has remained controversial since the early 1970s. However, recent reports have found that intravenous vitamin C is far more potent than oral forms of the vitamin in cancer treatment.

In the study, Keun Jeong Song, MD, of the Samsung Medical Center, Seoul, Korea, and his colleagues treated 39 terminal cancer patients with two 10-gram intravenous administrations of vitamin C within a three-day period, followed by oral intake of 4 grams daily for one week. Song used a standardized questionnaire to assess changes in the patients' health.

By the end of the week, Song found that the patients' overall quality of life scores jumped from 36 to 55 on the test, a 53 percent improvement.

The patients had significant improvements in physical, emotional, and cognitive function. They also had better appetites and significant decreases in fatigue, pain, nausea, and vomiting.

“Improved health-related quality of life is important as much as a cure of cancer in terminally ill cancer patients who have an estimated survival of less than six months,” wrote Song.

According to Song, vitamin C has numerous benefits in inhibiting the growth of cancer cells as well as destroying them. It also plays important roles in energy production, neurotransmitters, detoxification, and cholesterol metabolism

Reference: Yeom CH, Jung GC, Song KJ. Changes of terminal cancer patients' health-related quality of life after high dose vitamin C administration. *Journal of Korean Medical Science*, 2007;22;7-11. For additional information on vitamin C and cancer, see: Padayatty SJ, Riordan HD, Hewitt SM, et al. Intravenously administered vitamin C as cancer therapy: three cases. *CMAJ*, 2006;174:937-942. □

High-Fat Ketogenic Diet May Be of Benefit in Treating Brain Cancers

A high-fat ketogenic diet, sometimes prescribed for children with epilepsy, may have benefits in treating brain cancer, according to the results of an animal study.

The ketogenic diet is high in fat and relatively low in protein and carbohydrate. It increases levels of ketone bodies, which provide an especially efficient fuel for brain cells, while decreasing blood sugar levels.

In the study, Thomas N. Seyfried, PhD, of Boston College, Boston, Massachusetts, and his colleagues fed laboratory adult mice one of three diets: a conventional high-carb diet, unrestricted amounts of KetoCal, and calorie-restricted amounts of KetoCal. They also implanted the mice with either a malignant strain of mouse cancer or a malignant strain of human brain cancer.

KetoCal is a “medical food” given to children with epilepsy who have not responded to conventional medical treatment. It contains a 4:1 ratio of fats to protein and carbohydrate. The rationale for the calorie-restricted amount of Keto-Cal was based on previous animal research by Seyfried showing that calorie restriction had benefits in brain cancer.

The growth of the mouse brain cancers decreased by 65 percent among animals on the calorie-restricted KetoCal diet. Meanwhile, the growth of the human cancers implanted in the mice decreased by 35 percent. In addition, the vascularization of the tumors – that is, the development of blood vessels needed to spread the cancer – also decreased significantly.

Normal brain cells can use either blood sugar or ketone bodies as fuel, whereas cancer cells only use blood sugar. High levels of ketone bodies lower blood sugar levels, thereby blocking the only fuel cancer cells can use.

Reference: Zhou W, Mukherjee P, Kiebish MA, et al. The calorically restricted ketogenic diet, an effective alternative therapy for malignant brain cancer. *Nutrition & Metabolism*, 2007; 4:doi:10.1186/1743-7075-4-5. □

Supplements of Ginkgo Found to Reduce Anxiety Levels

Supplements of a standardized *Ginkgo biloba* herbal supplement can significantly reduce symptoms of anxiety in middle-age men and women. The study focused on people with either generalized anxiety disorder or adjustment disorder with anxious mood.

Generalized anxiety disorder describes people

Continues on next page

Quick Reviews of Recent Research

• Vitamin D may impact rheumatoid arthritis

Italian researchers found that vitamin D levels, which increase with sun exposure, were higher year round in people from southern Europe (Italy) than in northern Europe (Estonia), regardless of whether they had rheumatoid arthritis or not. Summer levels of vitamin D were significantly higher than winter levels in both countries. Low vitamin D levels correlated significantly with symptoms of rheumatoid arthritis, "suggesting possible effects of vitamin D among other factors on disease activity."

Cutolo M, et al. *Clinical and Experimental Rheumatology*, 2006;24:702-704.

• Flavonoids reduce risk of cardiovascular disease

American and Norwegian researchers analyzed the relationship between intake of dietary flavonoids and the risk of cardiovascular diseases. High intake of flavonoids – specifically the subgroups of anthocyanidins, flavanones, and flavones – were associated with reductions in the risk of coronary heart disease, cardiovascular disease, and death. They were not associated with a lower risk of stroke.

Mink PJ, et al. *American Journal of Clinical Nutrition*, 2007;85:895-909.

Ginkgo and Anxiety...

Continues from previous page

with excessive worry and no apparent psychological cause. Adjustment disorder with anxious mood describes people with anxiety in response to an identified stress.

In the study, Helmut Woelk, MD, of Giessen, Germany, and his colleagues treated 107 patients with 480 mg of ginkgo extract, 240 mg of ginkgo extract, or placebo daily for four weeks. They assessed the patients before and after supplementation using the Hamilton Rating Scale for Anxiety.

Before supplementation began, the patients scored an average of about 30 points on the Hamilton test. People who took the highest dose of ginkgo averaged almost a 14.3 point drop – that is, an almost 50 percent decrease – in anxiety scores. The lower dose of ginkgo led to a 12.1 point decline, and placebos prompted a 7.8 point decrease.

The standardized ginkgo is known as EGb 761, and it is commonly sold in health food stores.

Reference: Woelk H, Arnoldt KH, Kieser M, et al. *Ginkgo biloba* special extract EGb 761 in generalized anxiety disorder and adjustment disorder with anxious mood: a randomized, double-blind, placebo-controlled trial. *Journal of Psychiatric Research*, 2007;41:472-480. □

• Dietary vitamin C may lower oral cancer risk

In a study of 42,340 men, American researchers found that high dietary intake of vitamin C was associated with a 48 percent lower risk of developing precancerous lesions of the mouth. Other nutrients, as well as supplemental vitamin C, were not related to a reduced risk. The researchers noted that vitamin C could be a marker for other nutrients found in fruits and vegetables.

Maserejian NN, et al. *International Journal of Cancer*, 2006;120:970-977.

• Omega-3 fats may preserve bone health

American researchers asked 23 middle-age subjects, 20 of whom were men, to follow three diets, each for six weeks. The diets contained fats comparable to those of the average American diet, fats high in linoleic acid (omega-6), or fats high in alpha-linolenic acid (omega-3). By tracking markers of bone metabolism, the researchers found that a diet high in plant sources of omega-3 fats did the best job of preserving bone. Walnuts and flaxseed were the principal sources of alpha-linolenic acid, the parent molecule of the omega-3 family of fats. Previous research had found an association between high intake of saturated fat and lower bone density.

Griel AF, et al. *Nutrition Journal*, 2007;6:2: doi: 10.1186/1475-2891-6-2.

• Vitamin E may benefit people with diabetes

People with type-2 diabetes are, on average, four times more likely to develop heart disease. Researchers asked 55 patients with diabetes to take 500 mg daily of alpha-tocopherol, mixed tocopherols, or placebos daily for six weeks. The vitamin E supplements reduced "oxidative stress," which is often elevated in people with diabetes. Both forms of vitamin E had benefits, but the mixed tocopherols seemed to be slightly better.

Wu JHY, et al. *Clinical Chemistry*, 2007;53: 511-519.

The Nutrition Reporter™ (ISSN 1079-8609) is published monthly except for August and December and is distributed only by prepaid subscription. This issue, Vol 18 No 6, © June 2007 by Jack Chalem. All rights reserved. Reproduction without written permission is prohibited. Phone: (520) 529-6801. Fax: (520) 529-6840. Email address: nutritioncomment@cs.com. The Nutrition Reporter™ is strictly educational and not intended as medical advice. For diagnosis and treatment, consult your physician. Subscriptions are \$27 per year in the U.S.; either \$33 U.S. or \$48 CDN for Canada; and \$40 for other countries, payable in U.S. funds through a U.S. bank. The Nutrition Reporter is a trademark (TM) of Jack Chalem.

THE NUTRITION REPORTER™

Post Office Box 30246 • Tucson AZ 85751-0246 USA

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

Medical and Scientific Advisors:

Richard P. Huemer, MD Lancaster, Calif • **Ralph K. Campbell, MD** Polson, Montana
Peter Langsjoen, MD Tyler, Texas • **Ronald Hunninghake, MD** Wichita, Kansas
Marcus Laux, ND San Francisco, California • **James A. Duke, PhD** Fulton, Maryland

