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Adequate Levels of Vitamin B12 May Prevent Brain Shrinkage, Alzheimer's

Low levels of vitamin B12 are strongly associated with brain shrinkage, a condition common in people with Alzheimer's disease. Conversely, adequate intake of the vitamin, from foods or supplements, might have a protective effect.

Writing in the journal *Neurology*, Anna Vogiatzoglou, MSc, of Oxford University, England, and her colleagues wrote that "risk factors for cognitive impairment may be present years before clinical dementia and Alzheimer's disease (AD) can be diagnosed. Therefore, it is important to identify individuals at risk of developing dementia. Brain atrophy is associated with confirmed AD and is a marker of disease progression."

Vogiatzoglou tracked the health of 107 men and women for five years. The participants ranged from 61 to 87 years of age, and none showed signs of cognitive impairment when the study began.

She and her colleagues used magnetic resonance imaging scans to measure brain size, and blood tests to measure levels of vitamin B12 and folic acid, as well as homocysteine and methylmalonic acid to indirectly measure activity of the vitamins.

Although all of the subjects had vitamin B12 levels in the normal range, people with lower levels of the vitamin were six times more likely to experience brain shrinkage during the five years of the study. The researchers also reported that low levels of holotranscobalamin, a marker of vitamin B12 activity, were also related to a six time greater risk of brain shrinkage.

Folic acid, homocysteine, and methylmalonic acid levels were not related to brain shrinkage.

Vogiatzoglou and her colleagues wrote that vitamin B12 levels "may be an early marker of brain atrophy and thus a potentially important modifiable factor for cognitive decline in the elderly."

Other studies have also found an association between low levels of vitamin B12 and cognitive impairment. Some cases of pseudo-Alzheimer's

disease have been reversed with vitamin B12 supplements or injections.

Last year, researchers reported that people taking histamine-3 receptor (H2) antagonists (e.g., Tagamet and Zantac) – drugs that interfere with vitamin B12 absorption – were about two and one-half times more likely to experience cognitive impairment.

Reference: Vogiatzoglou A, Refsum H, Johnston C, et al. Vitamin B12 status and rate of brain volume loss in community-dwelling elderly. *Neurology*, 2008;71:826-832. See also: Boustani M, Hall KS, Lane KA, et al. The association between cognition and histamine-2 receptor antagonists in African Americans. *Journal of the American Geriatric Society*, 2007; 55:1248-1253. □

Perspectives

Stay on Message, Nutritionally

Leading up to the recent election, the major American political parties often talked about "staying on message" – that is, remaining focused on repeating their particular issues, whether about the economy or the war in Iraq. The same concept about staying on message can apply to how we eat as well.

Over the past week, I've read about the anti-oxidant benefits of açai berries and pomegranate seeds. That's on top of what I read before about the benefits of grapefruit, broccoli, and fish. Each week brings new research on the health benefits of individual nutrients and foods.

It comes as no surprise that many companies try to turn such findings into marketable products, such as açai or broccoli supplements. I have no problem with companies doing that. I'm a big advocate of supplements and I take my share of them, but I also know where to draw the line. We must always remember that nutrients are best consumed as foods, not as pills. Supplements are just that – supplements.

A single healthy meal – say, salmon, steamed vegetables, and brown rice – contains far more nutrients than any handful of supplements. The

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amounts of nutrients might not always be very high, but the plate offers a diverse selection of vitamins, minerals, antioxidants, and healthy omega-3 fats. A diversity of nutrients is every bit as important as large concentrations of some of them.

Foods contain many important nutrients that have not been studied in depth. Foods taste good, at least when made in sensible ways. Prepared with a positive attitude, foods make for a rewarding and creative experience. And shared with friends, good foods can contribute to great conversation.

Take your supplements and rejoice in their many health benefits. But at the same time, remember that they complement the foods that feed the very being of who we are. –*JC*

Antioxidants Prevent Fuzzy Thinking in People with Diabetes

Elevated blood sugar levels reduce alertness and interfere with normal thinking processes. They can also lead to abnormalities in brain structure. But a new study shows that taking vitamin C and E supplements can block the cognitive impairment – that is, fuzzy thinking – that often follows meals high in both fat and carbohydrates.

Carol E. Greenwood, PhD, of the University of Toronto, Canada, asked 16 men and women, all diagnosed with type 2 diabetes, to participate in the study. On one day, the subjects' memory was tested before and after consuming a glass of water. On another day, they underwent memory tests before and after consuming a meal consisting of a Danish pastry, cheddar cheese, and yogurt with whipped cream. On yet another day, the men and women had memory tests before and after eating the same meal, but with the addition of 1,000 mg of vitamin C and 800 IU of vitamin E.

The meal provided about 50 grams of fat, 63 grams of carbohydrate and 25 grams of protein.

About an hour and one-half after eating the Danish pastry, cheddar cheese, and yogurt with whipped cream, the subjects experienced a significant decline in their ability to remember information. However, the vitamin supplements blunted the post-meal memory impairment.

Greenwood wrote that “ingestion of a high-fat high-glycemic-index carbohydrate meal acutely impairs memory performance in adults with type 2 diabetes mellitus... These deficits were minimized or masked when the meal was taken together with vitamins C and E.

Reference: Chui MH, Greenwood CE. Antioxidant vitamins reduce acute meal-induced memory deficits in adults with type 2 diabetes. *Nutrition Research*, 2008;28:423-429. □

N-Acetylcysteine Might Help Prevent “Chemo Brain”

Up to 70 percent of cancer patients undergoing chemotherapy experience a form of attention deficit and impaired memory called “chemo brain.” But an animal study suggests that this type of brain fog can be prevented with supplemental N-acetylcysteine (NAC), an antioxidant.

Gregory W. Konat, PhD, of the West Virginia University School of Medicine, Morgantown, and his colleagues exposed laboratory rats to two commonly used chemotherapeutic drugs, Adriamycin and Cytosin.

Konat found that the drugs impaired the animals' memory. However, the memory impairment was prevented by giving the animals injections of NAC three times weekly.

The dose of NAC was the human equivalent of 14,000 mg, a very large but safe amount.

“These results indicate that chemotherapeutic agents alone, i.e., in the absence of malignancy, damage the brain resulting in memory dysfunction,” wrote Konat. “Moreover, the results strongly indicate that the damaging effect is mediated by oxidative stress, as memory dysfunction is preventable by the co-administration of NAC.”

NAC is used in hospitals to break down lung mucus and to treat Tylenol® overdose. As an antioxidant supplement, it is commonly used to reduce cold and flu symptoms.

Reference: Konat GW, Kraszpuski M, James I, et al. Cognitive dysfunction induced by chronic administration of common cancer chemotherapeutics in rats. *Metabolic Brain Disease*, 2008;23:325-333. □

Omega-6 Fats, Common in Junk Foods, Linked to Breast Cancer

Diets high in omega-6 fats increase the risk of breast cancer in women, but heterocyclic amines do not, according to a study by Swedish researchers.

Emily Sonestedt, PhD, of Lund University and her colleagues analyzed data from 11,699 women, ages 50 and older, participating in the Malmö Diet and Cancer study. Over 10 years of follow up, 430 of the women with diagnosed with breast cancer.

Women consuming large amounts of heterocyclic amines, a byproduct created by cooking meat and fish at high temperatures, did not have an increased risk of breast cancer – an unexpected finding.

However, women consuming large amounts of omega-6 fats had a 61 percent higher risk of developing breast cancer.

The omega-6 fats – specifically linoleic acid and

arachidonic acid – are found in many common cooking oils, including corn, safflower, soybean, and peanut oil. They are not found in appreciable amounts in olive oil.

Sonestedt also found that the consumption of large amounts of alcohol were associated with a two and one-half time increased risk of breast cancer.

Reference: Sonestedt E, Ericson U, Gullberg B, et al. Do both heterocyclic amines and omega-6 polyunsaturated fatty acids contribute to the incidence of breast cancer in postmenopausal women of the Malmö diet and cancer cohort? *International Journal of Cancer*, 2008;123: 1637-1643. □

Vitamin K Supplements Improve Glucose Tolerance in Men

Increasing research has pointed to the importance of vitamin K in maintaining normal glucose tolerance – i.e., resistance to diabetes. Now, researchers at Tufts University, Boston, have found that modest supplemental amounts of vitamin K do in fact improve several markers of glucose tolerance.

Sarah Booth, PhD, and her colleagues gave 355 men and women, ages 60 to 80 years old, either 500 mcg of vitamin K1 or placebos daily for three years. By the end of the study, men taking vitamin K had improvements in fasting blood sugar and fasting insulin levels, as well as in the Homeostasis Assessment Model for Insulin Resistance (HOMA-IR). The HOMA-IR is a calculation of insulin resistance based on a combination of fasting blood sugar and insulin.

By the end of the study, men taking vitamin K had decreases in HOMA-IR and fasting insulin – indicating improved glucose tolerance – whereas men taking placebos experienced increases. Men taking vitamin K had a slight increase in fasting blood sugar, but men taking placebos had a four-fold greater increase.

Vitamin K did not influence glucose tolerance in women.

Last year, researchers at Columbia University, New York, discovered that the protein osteocalcin also functioned as a hormone regulating glucose tolerance. Vitamin K is needed to make osteocalcin.

Reference: Yoshida M, Jacques PF, Meigs JB, et al. Effect of vitamin K supplementation on insulin resistance in older men and women. *Diabetes Care*, 2008; epub ahead of print. □

Early Fish Consumption Lowers Risk of Eczema in Infants

Consuming fish before the age of nine months seems to reduce the risk of eczema in infants, according to a study by Swedish researchers. Eczema is a type of skin inflammation also described as atopic dermatitis.

Bernt Alm, MD, PhD, of the University of Gothenburg and his colleagues analyzed the diets and other potential factors and the risk of eczema of 4,921 infants. At six months of age, almost 14 percent of the infants had developed eczema, and at 12 months almost 21 percent of infants had developed eczema.

Three of the strongest associated risk factors were a mother with eczema, a sibling with eczema, and allergy to cow's milk.

However, infants who began consuming some fish before the age of nine months had a 24 percent lower risk of developing eczema.

Reference: Alm B, Aberg N, Erdes L, et al. Early introduction of fish decreases the risk of eczema in infants. *Archives of Disease in Childhood*, 2008; doi 10.1136/adc.2008.140418. □

High Levels of Vitamin D Appear to Protect Against Breast Cancer

Considerable evidence points to the important role of vitamin D in preventing breast cancer. But a new study suggests that high levels of vitamin D may be especially protective against estrogen-positive breast cancer, the most common type.

Kristina M. Blackmore, MS, a research associate at Mount Sinai Hospital, Toronto, Canada, and her colleagues compared vitamin D levels in 759 women diagnosed with breast cancer and 1,135 women without the disease.

High vitamin D levels, from either sun exposure or dietary sources, were associated with a 24 percent lower risk of both estrogen-positive and progesterone-positive breast cancer. The growth of these types of breast cancer are stimulated by the hormones estrogen and progesterone.

Blackmore also found that high vitamin D levels were associated with a lower risk of estrogen- and progesterone-negative cancers, but the relationship was not as strong.

Reference: Blackmore KM, Lesosky M, Barnett H, et al. Vitamin D from dietary intake and sunlight exposure and the risk of hormone-receptor-defined breast cancer. *American Journal of Epidemiology*, 2008; doi 10.1093/aje/kwn198. □

N-Acetylcysteine Helps Resolve Persistent Ear Infections

N-acetylcysteine (NAC) can help resolve drug-resistant ear infections, according to a small study involving seven patients.

Won-Taek Choe, MD, of the California Ear Institute, Palo Alto, and his colleagues treated seven patients, ages 11 to 81 years old, with persistent ear infections that had been resistant to antibiotics. Most of the patients were adults who had suffered chronic

Quick Reviews of Recent Research

• Vitamin C protects against bone loss

Researchers at Tufts University, Boston, studied the vitamin C intake and risk of osteoporosis among 5,200 elderly men and women. Dietary vitamin C protected against bone loss, whereas a combination of dietary and supplemental vitamin C protected against bone loss in men who happened to be deficient in either calcium or vitamin E. Vitamin C did not seem related to bone health in women. The vitamin is needed to make collagen, which makes up 90 percent of the protein in bone.

Sahni S. *Journal of Nutrition*, 2008;138:1931-1938.

• St. John's wort helpful in major depression

The herb St. John's wort has been generally recommended for treating mild to moderate depression. However, in an analysis of 29 studies involving almost 5,500 patients, German researchers found that St. John's wort was more effective than placebos and generally equivalent to pharmaceutical drugs in the treatment of major depression, the most severe type. Major depression tends to be resistant to most types of medical treatment.

Linde K. *Cochrane Collaboration*, 2008; doi 10.1012/14651858.CD000448.pub3.

• Pycnogenol® Helpful in Knee Osteoarthritis

Pycnogenol, an antioxidant extract derived from French maritime pine bark, has well-documented anti-inflammatory benefits. Researchers from Slovakia used Pycnogenol to treat 100 patients with knee osteoarthritis. They were given 150 mg of

Pycnogenol or placebos daily for three months. People taking the Pycnogenol supplements benefited from reductions in pain and decreased use of analgesic drugs.

Cisar P. *Phototherapy Research*, 200822:1087-1092.

• Ginkgo may lessen stroke damage

The herb *Ginkgo biloba* has long been recommended to improve memory. Researchers at Johns Hopkins University School of Medicine, Baltimore, reported that standardized extracts of the herb ginkgo can prevent or reduce brain damage after a stroke. The study used mice, who were given the human equivalent of 7,000 mg (7 grams) of ginkgo extract daily. Overall, supplemental ginkgo reduced brain damage and neurological dysfunction by approximately 50 percent.

Saleem S. *Stroke*, 2008; doi 10.1161/strokeaha.108.523480.

• Researchers find fruit antioxidants not equal

Researchers at Cornell University, New York, analyzed the antioxidant activity of fruits. They found that pomegranate seeds and berries (blueberries, raspberries, and blackberries) had the highest antioxidant activity of 25 tested fruits. Bananas and melons had the lowest antioxidant activity.

Wolfe KL. *Journal of Agricultural and Food Chemistry*, 2008;56:8418-8426.

• Chamomile tea may help lower blood sugar

Researchers from Japan and the United Kingdom studied the effects of chamomile extracts on blood sugar in laboratory rats. They found that hot water extracts of chamomile – essentially, a tea – lowered blood sugar levels. The researchers noted that their findings “clearly suggested that daily consumption of chamomile tea with meals could contribute to the prevention of...hyperglycemia and diabetic complications.”

Kato A. *Journal of Agricultural and Food Chemistry*, 2008;56:8206-8211.

Persistent Ear Infections...

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ear infections for periods ranging from two months to five years.

The patients were treated with a topical liquid form of the antibiotic Ciprodex, and a liquid form NAC was added to it. The patients self-administered three to five drops of the solution in their ears three times daily.

In most of the cases, the ear infections resolved after several weeks. One patient who did not consistently take the antibiotic and NAC combination continued having a chronic ear infection.

Choe and his colleagues used NAC because previous research had shown that it enhanced the effectiveness of antibiotics. Also, animal studies have found that NAC supplements help preserve hearing.

Reference: Choe WT, Murray MT, Stidham KR, et al. N-acetylcysteine as an adjunct for refractory ear infections. *Otology & Neurotology*, 2008;28:1022-1025. □

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