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Use B-Complex Vitamins and DHA to Keep Your Brain Sharp as You Age

If you want to keep your marbles as you grow older, it may be worthwhile focusing on two nutrients: B-complex vitamins and docosahexaenoic acid (DHA), one of the omega-3 fats found in fish oils. Three recent studies have found that these nutrients play major roles in keeping the brain sharp.

In the first study, A. David Smith, PhD, of Oxford University, England, and his colleagues analyzed data from 168 men and women they treated with either B-vitamins or placebos. The subjects' brain changes were also tracked with MRIs (magnetic resonance images) of the brain.

The supplements consisted of 800 mcg of folic acid, 500 mcg of vitamin B12, and 20 mg of vitamin B6 daily, which the subjects took for two full years.

The study participants had been diagnosed with mild cognitive impairment and brain atrophy – problems likely to develop into Alzheimer's disease. Smith also measured the subjects' blood levels of homocysteine, one of the markers of B-vitamin deficiency and a risk factor for cardiovascular disease and Alzheimer's.

People taking the B vitamins experienced an average of 30 percent less brain shrinkage, but some of the patients had more than a 50 percent reduction in brain shrinkage, compared with those in the placebo group.

Homocysteine levels also decreased significantly among those taking B vitamins, and the rate of response was related to initial homocysteine levels. People with higher homocysteine levels were more likely to benefit from the B vitamins.

In the second study, Giuseppe Astarita, DSc, of the University of California, Irvine, and his colleagues compared brain and liver levels of DHA in 37 people with Alzheimer's and 14 without the disease. All of the tissues samples were obtained post mortem. People with Alzheimer's had lower levels of DHA, which is a precursor for neuroprotective compounds.

"There were statistically detectable differences in

DHA content in all [brain] regions examined," Astarita wrote.

Astarita determined that the low levels of DHA were related to a defect in the liver's ability to convert tetracosahexaenoic acid (THA) to DHA. THA is the immediate metabolic precursor to DHA, and the conversion requires "D-bifunctional protein." People with Alzheimer's appear to lack the ability to make this particular protein. The finding "led us to hypothesize that the alteration in brain DHA might result from a systemic deficiency in the biosynthesis of this fatty acid," Astarita wrote.

Although Astarita did not explicitly suggest it, his research left open the possibility of using DHA supplements to bypass this defect.

Finally, Matthew F. Muldoon, MD, of the University of Pittsburgh in Pennsylvania and his colleagues measured blood levels of three omega-3 fats – alpha-linolenic acid (ALA), eicosapentaenoic acid (EPA), and DHA – in 280 people between the ages of 35 and 54 years. None of the subjects had been taking omega-3 supplements.

People with higher levels of DHA performed better on tests given to gauge reasoning, mental flexibility, memory, and vocabulary.

Muldoon wrote that the omega-3s are "emerging as important nutrients for optimal brain development and for possible protection against brain senescence...it is plausible that insufficient dietary intake is related to relatively poor cognitive abilities or performance throughout the lifespan..."

References: Smith DA, Smith SM, de Jager CA, et al. Homocysteine-lowering by B vitamins slows the rate of accelerated brain atrophy in mild cognitive impairment: a randomized controlled trial. *PLoS One*, 2010;5:e12244. Astarita G, Jung KM, Berchtold NC, et al. Deficient liver biosynthesis of docosahexaenoic acid correlates with cognitive impairment in Alzheimer's disease. *PLoS One*, 2010;5:e12538. Muldoon MF, Ryan CM, Sheu L, et al. Serum phospholipid docosahexaenoic acid is associated with cognitive functioning during middle adulthood. *Journal of Nutrition*, 2010;140:848-853. □

More research summaries on next page

Perspectives

Resentment vs Gratitude

Resentment rarely affects anyone but the resentful person. It ends up eating away at a person, like an emotional cancer. It is negative mental energy at its worst.

At this time of year, when many people celebrate Thanksgiving and Christmas (or comparable holidays in other countries), it's important to consider two states of mind that I consider the antithesis of resentment: gratitude and forgiveness. Expressing one or both is good for your health, and they can help you let go of resentment.

Gratitude is really about giving thanks to the people around you. It acknowledges the good things they have contributed to your life. Likewise, forgiveness takes a positive view – helping you let go of the negative feelings you might be harboring toward other people. Expressing gratitude and forgiveness shift our brain biochemistry in positive ways and help reduce feelings of stress and resentment.

They are positive mental energy at its best. Start expressing gratitude and forgiveness now, and continue doing so through next year as well. –*JC*

Dietary Habits Influence Types of Bacteria Found in Our Guts

Our digestive tracts contain hundreds of species of bacteria that aid in the breakdown of food and also make small amounts of some vitamins. These bacteria also help maintain normal immunity and help the body fight a wide range of infections.

Over the past couple of years, research on people and animals has suggested that an imbalanced ratio of some of these bacteria might also be a factor in obesity. For example, thin people tend to have large numbers of bacteria from the Bacteroidetes family, whereas obese people have a greater preponderance of bacteria from the Firmicutes family.

Now, a team of researchers has shown that specific dietary habits seem to favor one family of bacteria over the other with a variety of implications for health.

Paolo Lionetti, MD, of the Meyer Children Hospital in Florence, Italy, and his colleagues compared the fecal bacteria in European children and those from children in a rural African village. Fecal bacteria are representative of those found in the digestive tract.

Lionetti noted that the diet of the rural African children was similar to that of people living thousands of years ago at the very beginnings of

human agriculture. The rural African diet is very high in fiber.

Bacteria from the African and European children differed significantly. Samples from the African children were very high in Bacteroidetes and very low in Firmicutes bacteria – 73 to 12 percent. In contrast, samples from the European children consisted of 51 percent Firmicutes and just 27 percent Bacteroidetes.

The African children also had species of bacteria that were especially efficient at breaking down dietary fiber, so the carbohydrates in them could be used for energy. Lionetti noted that these bacteria probably coevolved with the dietary habits of rural Africans. These fiber-digesting bacteria were not present in the European children.

Lionetti noted that some of the differences in bacteria would protect the African children from infection and inflammation. These children had lower number of *Shigella* and *Escherichia* bacteria (which are potentially infectious), compared with the European children. Lionetti added that “increased gut microbial diversity and reduced quantities of potentially pathogenic strains” of bacteria could improve resistance to infection.

Reference: De Filippo C, Cavalieri D, Di Paola M, et al. Impact of diet in shaping gut microbiota revealed by a comparative study in children from Europe and rural Africa. *Proceedings of the National Academy of Sciences of the USA*, 2010;107:14691-14696. □

High-Glycemic Diets Increase Death Risk from Inflammation

Eating a diet rich in high-glycemic foods – which provoke a rapid increase in blood sugar – appears to boost the risk of death from inflammatory diseases. Those foods include sugars, refined starches (e.g., bread, buns, bagels, and muffins), and potatoes.

Paul Mitchell, MD, PhD, of the University of Sidney, Australia, and his colleagues, tracked 2,735 postmenopausal women and middle-age and elderly men over 13 years. All of the subjects had completed a dietary survey.

During the study, 170 of the participants died from inflammatory diseases. After excluding cardiovascular and cancer-related deaths, Mitchell found that women eating the most high-glycemic foods were almost three times more likely to die from inflammatory diseases. The causes of death were related to infection, respiratory disorders, nervous system diseases, digestive system disorders, and musculoskeletal diseases.

Several other studies have shown that high-

glycemic diets increase levels of C-reactive protein (CRP), a marker and promoter of inflammation.

In the latest study along these lines, Enrique F. Schisterman, PhD, of the National Institutes of Health, Bethesda, Maryland, and his colleagues found that eating whole grains – a relatively low-glycemic food – had a significantly lower risk of elevated CRP levels.

References: Buyken AE, Flood V, Empson M, et al. Carbohydrate nutrition and inflammatory disease mortality in older adults. *American Journal of Clinical Nutrition*, 2010; 92:634-643. Gaskins AJ, Mumford SL, Rovner AJ, et al. Whole grains are associated with serum concentrations of high sensitivity C-reactive protein among premenopausal women. *Journal of Nutrition*, 2010;140:1669-1676. □

Dried Cranberries Help Men with Lower Urinary Tract Symptoms

The herb saw palmetto and the antioxidant lycopene have been shown to help men with the urinary symptoms characteristic of benign enlarged prostate. Now, a study has found that cranberries can have a similar benefit.

Jitka Vostalova, PhD, of Palacky University, Czech Republic, and her colleagues treated 42 men with an average age of 63 years, who had been experiencing lower urinary tract symptoms typical of benign prostate disease. The men had elevated levels of prostate specific antigen (PSA), were free of prostate cancer, and had no signs of infection.

Vostalova gave the men either 1,500 mg of dried cranberry fruit or placebos daily for six months, after which their health was reevaluated.

Men taking the cranberries had significant reductions in prostate symptoms and improvements in overall quality of life. They also benefited from improvements in urine flow and lower PSA levels. Men taking placebos had no significant improvements during the study.

Reference: Vidlar A, Vostalova J, Ulrichova J, et al. The effectiveness of dried cranberries (*Vaccinium macrocarpon*) in men with lower urinary tract symptoms. *British Journal of Nutrition*, 2010: doi 10.1017/S0007114510002059. □

Citrus Fruits, Green Tea Lower the Risk of Developing Cancer

Eating citrus fruits can reduce the risk of developing cancer – and the benefits are greatly enhanced in people who also make a habit of drinking green tea.

Wen-Qing Li, PhD, of the Tohoku University School of Medicine, Japan, and his colleagues investigated the relationship between citrus consumption and cancer incidence in a study of

42,470 Japanese adults. The study participants ranged from 40 to 79 years of age and were followed up for eight years. Daily consumption of citrus was associated with an 11 percent lower risk of all cancers, and men benefited from citrus slightly more than did women. Regular citrus consumption was also associated with about a one-third lower risk of either pancreatic or prostate cancer.

When Li factored in consumption of about one cup of green tea daily, men and women had about a 17 percent lower risk of any type of cancer.

Reference: Li WQ, Kuriyama S, Li Q, et al. Citrus consumption and cancer incidence: the Ohsaki cohort study. *International Journal of Cancer*, 2010;127:1913-1922. □

More Evidence that Vitamin D Protects Against Colds and Flu

Considerable research has shown that vitamin D is needed for a healthy immune system and that high levels can reduce the risk of contracting colds and flu.

In a recent study, James R. Sabetta, MD, of the Yale University School of Medicine and his colleagues measured vitamin D levels in the blood of 198 healthy adults. They were evaluated for signs of any acute respiratory tract infection – typically caused by the common cold or influenza – over the 2009-2010 winter.

People with vitamin D concentrations of 38 ng/ml or higher had a two-fold reduction in the risk of developing acute respiratory infections. They also had a significant reduction in the number of sick days.

Reference: Sabetta JR, DePetrillo P, Cipriani RJ, et al. Serum 25-hydroxyvitamin D and the incidence of acute viral respiratory tract infections in healthy adults. *PLoS One*, 2010;5: doi e11088. □

Fish and Omega-3 Intake Seem to Influence Depression in Teens

Teenagers who consume fish and omega-3 fats have a relatively low risk of feeling depressed, according to a study by Japanese researchers.

Kentaro Murakama, PhD, of the University of Tokyo and his colleagues analyzed whether feelings of depression were related to dietary intake of fish and omega-3 fats. They focused on 3,067 boys and 3,450 girls, ages 12 to 15 years old, attending public junior high schools.

Overall, 23 percent of the boys and 31 percent of the girls had symptoms of depression. However, boys who ate the most fish were about one-fourth less

Quick Reviews of Recent Research

• American eatings habits are ... awful

Researchers from the U.S. National Cancer Institute analyzed dietary habits among 16,338 people considered to be representative of the overall population. People did not meet federal dietary guidelines for fruits and vegetables, but did so for total grain, beef, and bean consumption. Nearly everyone overconsumed sugars, solid fats (e.g., butter and hydrogenated vegetable oils), and alcohol. More than 80 percent of people age 71 or older, as well as more than 90 percent of people in all other age groups, consumes more than the “discretionary calorie allowance.”

Krebs Smith SM. *Journal of Nutrition*, 2010; doi 10.3945/jn.110.124826.

• Vitamin D and physiotherapy have benefits

Swiss researchers treated 173 elderly patients who had suffered hip fractures. The patients were given either 2,000 IU of vitamin D daily, 800 IU of vitamin D, or extended physical therapy. The higher dose of vitamin D reduced hospital readmissions, but not falls. Meanwhile, physical therapy reduced falls, but not hospital readmissions. The researchers recommended using both therapies because they “address two different and important complications after hip fracture.”

Bischoff-Ferrari HA. *Archives of Internal Medicine*, 2010; 170:813-820.

• Chromium supplements help the brain

American researchers asked 26 older adults with mild cognitive impairment to take either 1,000 mcg of chromium picolinate or placebos daily for 12 weeks. By the end of the study, people taking the chromium had improvements in learning and memory. Magnetic resonance imaging scans indicated that people taking chromium had increased activity in several brain regions.

Krikorian R. *Nutritional Neuroscience*, 2010;13:116-122.

• Researchers find new omega-3 mechanism

A team of researchers from Japan and the United States identified a new way that omega-3 fish oils

Fish and Depression...

Continues from previous page

likely to experience feelings of depression. High dietary intake of eicosapentaenoic acid (EPA) was associated with a similar reduction in the risk of depression, but docosahexaenoic acid (DHA) was less strongly associated with better mood.

Reference: Murakami K, Miyake Y, Sasaki S, et al. Fish and n-3 polyunsaturate fatty acid intake and depressive symptoms: Ryukyus child health study. *Pediatrics*, 2010; doi 10.1542/peds.2009-3277. □

exert their benefits. In a cell study, the scientists found that omega-3 fish oils activate a cell receptor known as GPR120, which in turn helps reduce inflammation and improve insulin function.

Oh DY. *Cell*, 2010;142:687-698.

• Fructose stimulates cancer growth

Researchers from the University of California, Los Angeles, conducted laboratory experiments and found that fructose stimulated the proliferation of pancreatic cancer cells. They noted that their finding could have “major significance for cancer patients,” given the amount of fructose added to many foods. The researchers added that reducing refined fructose intake or inhibiting fructose-dependent biochemical reactions might help “disrupt cancer growth.”

Liu H. *Cancer Research*, 2010;70:OF1-OF9.

• Fish may protect against prostate cancer

A team of Canadian and American researchers analyzed 12 controlled studies that included 5,777 people with cancer and 9,805 people without cancer. Although diets high in fish did not appear to reduce the risk of prostate cancer, they did lower the risk of death from prostate cancer by 63 percent.

Szymanski KM. *American Journal of Clinical Nutrition*, 2010; doi 10.3945/ajcn.2010.29530.

• High cortisol levels show that stress kills

Cortisol is the principal stress hormone, and it is known to increase the risk of heart disease and accelerate the aging process. Dutch and Italian researchers analyzed urinary levels of cortisol among 861 people who were 65 years of age or older. People with the highest levels of urinary cortisol were five times more likely to die of cardiovascular diseases, compared with those who had low levels of the hormone. The risk applied to people with and without preexisting cardiovascular disease.

Vogelzangs N. *Journal of Clinical Endocrinology and Metabolism*, 2010;95; epub ahead of print.

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