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Omega-3 Fish Oil Supplements Ease Depression and Cognitive Problems

Low levels of omega-3 fish oils and high levels of omega-6 oils are associated with a greater risk of mood issues and impaired cognitive functioning in both seniors and children. On the bright side, omega-3 supplements can lead to improvements, according to studies by a team of Australian researchers.

In the first study, Natalie Sinn, PhD, of the University of South Australia, Adelaide, and her colleagues studied 50 men and women age 65 and older with mild cognitive impairment (MCI). The condition is often a prelude to Alzheimer's and other forms of dementia.

Compared with a group of 29 healthy control subjects, people with MCI tended to have more symptoms of depression, based on standard clinical tests. Furthermore, people with MCI had lower blood levels of eicosapentaenoic acid (EPA), found in fish oils, and higher blood levels of omega-6 fats.

High levels of one of the omega-6 byproducts, DPA (docosapentaenoic acid), was strongly associated with poorer mental health. Meanwhile, low omega-3 levels were related to higher levels of pain. (Linoleic acid, the "parent" omega-6 fat, is found in corn, soy, and and safflower oils and many packaged foods. When consumed, linoleic acid is metabolized to DPA and other compounds.)

There is evidence, Sinn and her colleagues wrote, that DPA replaces docosahexaenoic acid (DHA) in the brain when people are deficient in omega-3s.

In a related study, Sinn and her colleagues gave either high-EPA or high-DHA supplements, or placebos, to 50 seniors with mild cognitive impairment. The subjects took the supplements daily for six months.

The high-EPA supplements provided 1,670 mg of EPA and 160 mg of DHA daily, and the high DHA supplements provided 1,550 mg of DHA and 400 mg of EPA daily.

The subjects' physical and cognitive health were

assessed at the beginning and end of the study, and blood samples were also obtained to determine EPA and DHA levels.

At the end of the study, people taking either the high-EPA or high-DHA supplements had fewer signs of depression. Verbal fluency and physical health improved in the high-DHA group.

"Increasing omega-3 polyunsaturated fatty acid intakes may reduce depressive symptoms and the risk of progressing to dementia," wrote Sinn and her colleagues.

Because both EPA and DHA provided benefits, they also noted that their findings "suggest that pure EPA supplements employed in some mental health studies may not be the optimal choice."

Omega-3 fish oils might also benefit children with learning disorders.

In a third study published this year, Sinn and her colleagues measured blood levels of omega-3s in 75 children, ages seven to 12, who had been diagnosed with attention-deficit hyperactivity disorder (ADHD). They reported that higher blood levels of omega-3s were associated with less anxiety and shyness, and higher levels of DHA were associated with better reading skills. In contrast, higher levels of omega-6 fats were associated with poorer reading, vocabulary, spelling, and attention skills.

Overall, 36 percent of children with learning disabilities had lower levels of DHA.

References: Milte CM, Sinn N, Street SJ, et al. Erythrocyte polyunsaturated fatty acid status, memory, cognition and mood in older adults with mild cognitive impairment and healthy controls. *Prostaglandins, Leukotrienes and Essential Fatty Acids*, 2011;84:153-161. Sinn N, Milte CM, Street SJ, et al. Effects of n-3 fatty acids, EPA v. DHA, on depressive symptoms, quality of life, memory and executive function in older adults with mild cognitive impairment: a 6-month randomized controlled trial. *British Journal of Nutrition*, 2011: doi 10.1017/S0007114511004788. Milte CM, Sinn N, Buckley JD, et al. Polyunsaturated fatty acids, cognition and literacy in children with ADHD with and without learning difficulties. *Journal of Child Health Care*, 2011: doi 10.1177/1367493511403953. □

Ginger Root Supplements Reduce Markers of Colon Inflammation

Inflammation in the colon may be a prelude to the development of colon cancer, but a simple over-the-counter supplement can reduce inflammation.

Suzanna M. Zick, ND, MPH, of the University of Michigan Medical School, and her colleagues tested the effects of dried ginger root on 30 healthy subjects. At the beginning and end of the study, the researchers obtained small samples of colon tissue using a technique called flexible sigmoidoscopy.

The subjects were given either 2 grams of ginger or placebos daily in the form of capsules for 28 days.

Biopsies taken at the end of the study showed that ginger led to significant decreases in the amount of prostaglandin E2 (PGE2), a powerful promoter of inflammation produced as a byproduct of omega-6 fats. In addition, the ginger supplements led to decreases in three other pro-inflammatory byproducts of omega-6 fats.

The researchers believed that ginger's anti-inflammatory effects may be related to inhibition of arachidonic acid.

Reference: Zick SM, Turgeon K, Vareed SK, et al. Phase II study of the effects of ginger root extract on eicosanoids in colon mucosa in people at normal risk for colorectal cancer. *Cancer Prevention Research*, 2011;4:1-9. □

Low Levels of Vitamin B12 May Impair Thinking in Seniors

Several studies have implicated low levels of vitamin B12 as a factor in brain shrinkage and cognitive decline among seniors. Indeed, some research has found that vitamin B12 deficiency can mimic symptoms of dementia.

In the latest study along these lines, Christine C. Tangney, PhD, of the Rush University Medical Center, Chicago, and her colleagues gave neuropsychological tests to 121 men and women. The researchers also took magnetic resonance images (MRIs) of the subjects' brains and measured their blood levels of vitamin B12 and four other blood indicators of vitamin B12 status.

Blood levels of vitamin B12 per se did not correlate with brain size or cognition. However, several markers of vitamin B12 activity – sometimes referred to as functional markers – had a strong relationship to brain activity.

Abnormal highly levels of methylmalonic acid correlated with poor memory and slower perceptual speed, and cystathionine, and 2-methylcitrate levels were related to poor memory. Homocysteine, a

marker of vitamin B12 and folic acid activity, was associated with smaller brain size.

The activity of these substances in biochemical reactions depends on vitamin B12. Methylmalonic acid and the other markers reflect the true biological activity of the vitamin.

Tangney noted that measuring only blood levels of vitamin B12 might be a poor indicator of the vitamin's actual activity in the body.

Reference: Tangney CC, Aggarwal NT, Li H, et al. Vitamin B12, cognition, and brain MRI measures. *Neurology*, 2011; 77:1276-1282. □

Risk of Breast Cancer Is Reduced With Calcium and Vitamin D

A new study has found that taking a combination of calcium and vitamin D supplements can significantly lower a woman's risk of cancer in general and specifically breast cancer.

Mark J. Bolland, MB, PhD, of the University of Auckland, New Zealand, and his colleagues analyzed data from the American Women's Health Study. In this study, more than 36,000 women were given either placebos or 1,000 mg of calcium and 400 IU of vitamin D – a very modest amount of vitamin D by today's standards. They took the supplements daily for seven years.

Women taking the combination of supplements had a 14 percent lower risk of cancers. Strikingly, they had an 18 percent lower risk of breast cancer and a 20 percent lower risk of invasive breast cancer. They also had lower but statistically nonsignificant reductions in the risk of in situ breast cancer and colorectal cancer.

The researchers found no reduction in the risk of fractures.

"The nonskeletal effects of calcium/vitamin D may be more important than the skeletal effects and should be considered when evaluating these supplements," Bolland and his colleagues wrote.

Reference: Bolland MJ, Grey A, Gamble GD, et al. Calcium and vitamin D supplements and health outcomes: a reanalysis of the Women's Health Initiative (WHI) limited-access data set. *American Journal of Clinical Nutrition*, 2011;92:1144-1149. □

Green Tea Reduces Children's Risk of Contracting the Flu

Drinking green tea can help lower the odds of contracting the flu, according to a new study.

"Green tea is known to contain antiviral components that prevent influenza infection," wrote Hiroshi Yamada, MD, PhD, of the University of Shizuoka, Japan.

Yamada and his colleagues analyzed questionnaires from 2,050 students, ages six to 13 years, in elementary schools in Kikugawa City. The questionnaires included information about their consumption of green tea.

Influenza A and influenza B infections were reported by 241 of the children. Drinking one to three cups of green tea daily was associated with a 38 percent lower risk of developing the flu, and drinking three to five cups of tea daily was associated with a 66 percent lower risk of the flu.

Yamada and his colleagues also conducted laboratory tests to confirm flu infection in 204 of the students. In this group, drinking one to five cups of green tea on six or seven days a week reduced the risk of flu by 40 percent.

Green tea is rich in a family of antioxidants called catechins and the amino acid L-theanine. Both have been shown to enhance immunity.

Reference: Park M, Yamada H, Matsushita K, et al. Green tea consumption is inversely associated with the incidence of influenza infection among school-children in a tea plantation area of Japan. *Journal of Nutrition*, 2011;141:1862-1870. □

Prenatal Folic Acid Helps with Language Skills in Children

Pregnant women who take either folic acid alone or folic acid in combination with other vitamin supplements are more likely to have their children who develop normal language skills by the age of three years.

In contrast, women who do not take folic acid, or take vitamins without folic acid, are more likely to have children with severe delays in language development.

Christine Roth, MSc, ClinPsyD, of the Norwegian Institute of Public Health, Oslo, and her colleagues studied a group of 38,954 Norwegian children. Of these, 204 (one-half of 1 percent) experienced a severe language delay at age three years.

Roth mined the data to identify which mothers had taken folic acid supplements from four weeks before through at least eight weeks after conception. She also looked at whether mothers had taken folic acid in combination with other supplements, supplements without folic acid, or no supplements at all.

Women who had taken folic acid alone or with other supplements were 45 percent less likely to have a child with severe language delay at age three years. Roth wrote that severe language delay was diagnosed when children could state only “one word or unintelligible utterances.”

Folic acid is known to reduce the risk of neural-

tube birth defects, such as spina bifida, as well as play roles in gene regulation and nervous system repair. However, neurological development can be assessed only after birth.

Reference: Roth C, Magnus P, Schjolberg S, et al. Folic acid supplements in pregnancy and severe language delay in children. *JAMA*, 2011;306:1566-1573. □

New Type of CoQ10 Supplement Lowers Risky Form of Cholesterol

A relatively new form of coenzyme Q10 – ubiquinol – has been found to significantly lower blood levels of a form of cholesterol strongly associated with cardiovascular risk.

Ubiquinol, a vitamin-like substance, is also known as “reduced CoQ10,” meaning that it contains a balanced set of electrons. Some research suggests that it has greater potency than the more common form of CoQ10, which is known as ubiquinone.

Constance Schmelzer, MSc, of the Christian-Albrechts-University of Kiel, Germany, and her colleagues, asked 53 healthy men to take 150 mg of ubiquinol daily for two weeks.

After taking the supplements, the men’s blood levels of CoQ10 increased by almost five times.

During this time, the men’s low-density lipoprotein (LDL) levels decreased by an average of 12.7 percent. Significantly, their pattern B LDL declined by 33 percent. High levels of pattern B LDL, which consists of tiny particles that infiltrate blood vessel walls, are currently regarded as the most accurate predictor of cardiovascular risk.

In contrast, the ubiquinol had no effect on pattern A LDL, which consists of light and fluffy particles that do not harm blood vessel walls.

In addition, the ubiquinol decreased the activity of several pro-inflammatory molecules called cytokines.

Reference: Schmelzer C, Niklowitz P, Okun JG, et al. Ubiquinol-induced gene expression signatures are translated into altered parameters of erythropoiesis and reduced low density lipoprotein cholesterol levels in humans. *IUBMB Life*, 2011;63:42-48. □

B-Complex Vitamin Supplements Reduce Effects of Work Stress

Researchers have known since the 1940s that B-complex vitamins have an anti-stress effect. A new study clearly confirms these benefits.

“High levels of occupational stress have been associated with higher levels of personal psychological distress (e.g. depression, anxiety and burnout), personal physiological functioning (e.g. hypertension and cardiovascular problems) and lower scores of

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Quick Reviews of Recent Research

• Vitamin C may help children with asthma

Researchers from Finland and Egypt gave 200 mg of vitamin C or placebos to 60 children, ages seven to 10 years, in a cross-over clinical trial. The children took vitamin C for six weeks and then placebos for the same length of time. In the younger children in this group, vitamin C significantly improved lung function. After taking vitamin C, children with no exposure to dampness or molds had a 37 percent increase in the amount of air they could exhale. In the older children, the benefits were less dramatic.

Hemila H. *Clinical and Translational Allergy*, 2011;1: doi 10.1186/2045-7022-1-9.

• Sunlight exposure inadequate for many

Pigments in the skin of dark-complected people reduce their ability to make vitamin D after exposure to sunlight. Using artificial ultraviolet lights, British researchers simulated the government-recommended amount of sun exposure for 15 adult South Asians. At the beginning of the study, one-fourth of the subjects

B-Complex Vitamins...

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workplace variables such as lower morale and productivity and higher workplace disengagement,” wrote Con Stough, PhD, of the Swinburne University of Technology, Australia.

Stough and his colleagues tested the effects of two forms of the same high-potency B-complex supplement. One was a standard supplement and the other was designed as a sustained-release supplement, in which the ingredients are absorbed more slowly.

They gave the supplements to a group of 60 men and women for three months.

Using a battery of questionnaires, they assessed the subjects’ occupational stress, psychological strain, coping, and moods at the beginning and end of the study. Individual differences in personality and work demands were statistically controlled, Stough wrote.

Both types of B-complex supplements led to significantly lower levels of personal strain and a reduction in depression, dejection, confusion and anger by the end of the study.

“Given the cost of workplace stress claims, the loss of productivity...and the personal cost, an analysis of the economic impact of vitamin B supplementation in the workplace should be assessed,” Stough wrote.

Reference: Stough C, Scholey A, Lloyd J, et al. The effect of 90 day administration of a high dose vitamin B-complex on work stress. *Human Psychopharmacology*, 2011: doi 10.1002/hup.1229. □

were vitamin D deficient, and the others had marginal deficiencies. None of the subjects achieved normal vitamin D levels after exposure to ultraviolet light. The researchers wrote, “Sunlight-exposure recommendations are inappropriate for individuals of South Asian ethnicity who live at the United Kingdom latitude.”

Farrar MD. *American Journal of Clinical Nutrition*, 2011;94:1219-1224.

• L-leucine enhances muscle production

L-leucine is an essential amino acid that plays a key role in the production of muscle. In a study conducted by the U.S. Army, researchers have found that large amounts of L-leucine boost muscle synthesis during endurance exercise. The researchers had eight men consume a protein drink containing essential amino acids while cycling for 60 minutes. During one test, the drink contained 1.87 grams of L-leucine; on another test, the drink contained 3.5 grams of leucine. Muscle protein synthesis was 33 percent greater when the men consumed the larger amount of L-leucine.

Pasiakos SM. *American Journal of Clinical Nutrition*, 2011;94:809-818.

• Saffron may help in liver cancer

Saffron, the world’s most expensive spice, may provide some benefits in liver cancer, according to an animal study. Egyptian researchers fed large or small amounts of saffron to 16 laboratory rats for 24 weeks. Eight other animals did not receive saffron. Two weeks after starting the study, the researchers injected the animals with two chemicals known to cause liver cancer. None of the rats getting high doses of saffron developed liver nodules, and six of those receiving a lower dose developed nodules. In contrast, six of the eight rats getting distilled water developed liver nodules.

Amin A. *Hepatology*, 2011: doi 10.1002/hep.24433.

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