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Omega-3s Improve Memory, Found to Help Both Young and Old Brains

The omega-3 family of fats are known to be essential for normal brain and neurological development in infants. Two new studies show that they can benefit people of all ages.

Welma Stonehouse, PhD, of Massey University, New Zealand, along with British researchers, studied 176 adults, ages 18 to 45 years, who had a low intake of docosahexaenoic acid (DHA), one of the two principal dietary omega-3s. She and her colleagues gave about half of the study participants 1.16 grams (1,160 mg) of DHA daily and the others placebos for six months. Their cognitive performance – memory, attention, reaction time, and processing speed – was measured with a series of computerized tests.

The average reaction times of participants taking DHA supplements improved by 20 percent. In addition, DHA improved “episodic memory” in women – that is, the recall of specific earlier life events. Meanwhile, “working memory” – the ability to manage information for a relatively short period of time – improved in men taking DHA.

Also, men who were carriers of the APOE4 gene, which increases the risk of Alzheimer’s disease, showed improvements in reaction times after taking DHA. Women carriers of the APOE4 gene did not improve.

“DHA performs structural functions and influences numerous neuronal and glial cell processes,” wrote Stonehouse and her colleagues. “DHA has been shown to accumulate in areas of the brain involved in memory and attention such as the cerebral cortex and hippocampus...”

In the other study, Suzana Shahar, PhD, and her colleagues at Kebangsaan University, Malaysia, and her colleagues studied 67 people with mild cognitive impairment (MCI), which is often a prelude to Alzheimer’s disease, and compared them with 134 healthy seniors. Shahar estimated the subject’s intake of omega-3s – both DHA and eicosapentaenoic acid (EPA) – based on data from a dietary questionnaire.

Blood tests identified the subjects’ levels of lipid hydroperoxide, an indicator of oxidative (free radical) stress.

Compared with healthy subjects, people with MCI had higher levels of lipid hydroperoxide. And within the MCI group, people who had higher levels of omega-3 fats – both DHA and EPA – and lower levels of lipid hydroperoxide.

References: Stonehouse W, Conlon CA, Podd J, et al. DHA supplementation improved both memory and reaction time in healthy young adults: a randomized controlled trial. *American Journal of Clinical Nutrition*, 2013; doi 10.3945/ajcn.112.053371. Lee LK, Shahar S, Rajab N, et al. The role of long chain omega-3 polyunsaturated fatty acids in reducing lipid peroxidation among elderly patients with mild cognitive impairment: a case-control study. *Journal of Nutritional Biochemistry*, 2013;24:803-808. □

Perspectives New Benefits to Sunlight

Two recent studies attest to the benefits of sunlight – something worth keeping in mind when you’re avoiding the sun.

In one study of 24 people, Scottish researchers found that exposure to ultraviolet (UV) rays boosted blood levels of nitric oxide, a chemical that reduces blood pressure. After exposure to UV rays, the subjects had a significant decrease in their blood pressure.

Production of nitric oxide is unrelated to vitamin D.

The other study had interesting but mixed results. Researchers at the Albert Einstein College of Medicine in New York City reported that, as a group, people who had been diagnosed with skin cancer were almost 80 percent less likely to develop Alzheimer’s disease.

The researchers attributed the benefit to physical activity, which reduces the risk of dementia. But not everyone exercises outdoors. While excessive

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exposure to sunlight can increase the risk of skin cancer, sunlight also boosts vitamin D protection – and evidence suggests that vitamin D may protect against Alzheimer’s disease.

The reasonable compromise, according to Michael Holick, MD, of the Boston University School of Medicine, is relatively simple: adopt a sensible approach to sun exposure and take vitamin D supplements. –*JC*

Supplements May Have Benefits in Reducing Risk of Eye Disease

Two new studies show the benefits and possible limitations of supplements for reducing the risk of age-related macular degeneration (AMD). AMD is the most common cause of blindness among seniors.

Christin Arnold, Dipl-Troph, of Friedrich Schiller University Jena, Germany, and her colleagues asked 172 people to take placebos; supplements contain 10 mg of lutein, 1 mg of zeaxanthin, 100 mg of docosahexaenoic acid (DHA), and 30 mg of eicosapentaenoic acid (EPA) daily; or supplements containing double these amounts for one year.

After taking the supplements for one year, people benefited from an increased thickness of the macular pigment, a tiny deposit of lutein and zeaxanthin in the retina that filters out harmful wavelengths of light.

Separately, researchers reported the findings of the “AREDS2” study, which was a follow up to the AREDS1 results, published in 2001. In AREDS1, researchers found that a supplement containing 500 mg of vitamin C, 400 IU of vitamin E, 15 mg of beta-carotene, 80 mg of zinc, and 2 mg of copper significantly reduced the risk of AMD.

AREDS2 added 10 mg of lutein, 2 mg of zeaxanthin, 350 mg of DHA, and 650 mg of EPA to the original AREDS1 formula. After five years of supplementation, the researchers reported no clear overall benefits from the extra ingredients, although some subjects did benefit from a reduction in the progression to advanced AMD.

The researchers did note, however, that people in the AREDS2 study had a dietary intake of lutein and zeaxanthin that was similar to other well-nourished people, suggesting that they already had an optimal intake of those nutrients.

References: Arnold C, Winter L, Frohlich K, et al. Macular xanthophylls and omega-3 long-chain polyunsaturated fatty acids in age-related macular degeneration. *JAMA Ophthalmology*, 2013; doi 10.1001/jamaophthalmol.2013.2851. The Age-Related Eye Disease Study 2 (AREDS2) Research Group. Lutein + zeaxanthin and omega-3 fatty acids for age-related macular degeneration. *JAMA*, 2013;309: doi 10.1001/jama.2013.4997. □

Study Suggests Melatonin Might Reduce Type 2 Diabetes Risk

Melatonin, a hormone produced by the pineal gland, may play a role in reducing the risk of type 2 diabetes – or low levels of the hormone might reflect poor sleep quality that boosts the risk of diabetes.

“Several lines of evidence suggest that melatonin may have a role in glucose metabolism,” wrote Ciaran J. McMullan, MD, of the Harvard-affiliated Brigham and Women’s Hospital, Boston. “Ingestion of melatonin had a protective effect against the onset of diabetes in diabetes-prone rates with improvements also seen in the animals’ cholesterol and triglyceride levels...”

Using data from the Nurses’ Health Study, McMullan and his colleagues selected 370 women who had been diagnosed with type 2 diabetes. They then measured melatonin levels in the blood and urine of these women and compared their findings with 370 control subjects who had not developed diabetes.

Women with the lowest levels of melatonin were more than two times more likely to develop diabetes over a 10- to 12-year period.

McMullan also cited research showing that sleep disruptions are sometimes associated with diabetes risk, and that night-shift work, exposure to light at night, and sleep restriction can suppress melatonin levels and increase the risk of various diseases.

Reference: McMullan CJ, Schernhammer ES, Rimm EB, et al. Melatonin secretion and the incidence of type 2 diabetes. *JAMA*, 2013;309:1388-1396. □

Analysis Shows that Fish Oils Enhance Heart Rate Variability

Heart rate variability (HRV) – a good thing – refers to slight variations in the time between heart beats. HRV decreases under emotional strain and anxiety, and reduced HRV is a strong predictor of death after a heart attack.

Wei Xin, PhD, and her colleagues at the Chinese PLA General Hospital, Beijing, analyzed 15 studies, consisting of 692 subjects, who were given fish oils or placebos to determine the effect on HRV.

By analyzing a marker of vagal nerve function, Xin confirmed that HRV “was significantly increased by fish oil supplementation.” She added that “this may be an important mechanism underlying the antiarrhythmic effect” of fish oils.

Reference: Xin W, Wei W, Li XY. Short-term effects of fish oil supplementation on heart rate variability in humans: a meta-analysis of randomized controlled trials. *American Journal of Clinical Nutrition*, 2013;97:926-935. □

L-Carnitine Aids Recovery and Survival After Heart Attack

The body synthesizes L-carnitine, an amino acid-like substance, from lysine and methionine – all found in quality protein sources. L-carnitine transports fats into cells' mitochondria, where they are burned for energy. But after a heart attack, L-carnitine levels decrease, and supplements can help restore normal levels.

In a recent analysis of 13 studies, L-carnitine supplementation after a heart attack led to significant improvements in patient well being. James J. DiNicolantonio, PharmD, of Wegman's Pharmacy, Ithaca, N.Y., along with colleagues at the University of Missouri and other institutions, analyzed the studies, which included 3,629 heart-attack patients who had been given either L-carnitine or placebos.

Supplemental L-carnitine led to a 27 percent reduction in all causes of death, a 65 percent lowering of ventricular arrhythmias, and a 40 percent reduction in angina. The minimal effective dose was 2 grams daily and the optimal dose was 6 to 9 grams daily, according to the researchers.

They added that “a large trial may never be performed because L-carnitine is an over-the-counter supplement available to the public, which decreases the potential revenue compared with a synthesized product.”

Editor's note: A recent study blamed L-carnitine for an increase in the risk of heart disease, but the findings of the study were widely misinterpreted. Researchers had found that a metabolic byproduct called trimethylamine-N-oxide (TMAO) increased the risk of heart disease in mice. However, TMAO is manufactured by gut bacteria that metabolize L-carnitine and other substances. In a rush to scary headlines, reporters focused on L-carnitine instead of problems with the composition of gut bacteria.

Reference: L-carnitine in the secondary prevention of cardiovascular disease: systematic review and meta-analysis. *Mayo Clinic Proceedings*, 2013; doi 10.1016/j.mayocp.2013.02.007. □

Vitamin D May Lower Risk of Developing Uterine Fibroids

Add one more benefit to the many already attributed to vitamin D: it may reduce the risk of uterine fibroids, a type of benign tumor that's a common cause of hysterectomy.

Donna Day Baird, PhD, of the National Institute of Environmental Health Sciences, Research Triangle Park, N.C., and her colleagues studied the medical records of 1,036 women, ages 35 to 49 years, who

had been screened for uterine fibroids. They women had also provided blood samples to measure their vitamin D levels.

Using blood levels of 20 ng/ml as the dividing line between deficiency and sufficiency, Baird reported that only 26 percent of the women had normal levels of vitamin D. That broken down to only 10 percent of Blacks and 50 percent of whites.

Women who said their had sun exposure of at least one hour daily – weather permitting – were 40 percent less likely to have uterine fibroids.

Reference: Baird DD, Hill MC, Schectman JM, et al. Vitamin D and the risk of uterine fibroids. *Epidemiology*, 2013; 24:447-453. □

Vitamin-Like Coenzyme Q10 Found Helpful in Fibromyalgia

Coenzyme Q10 (CoQ10), the basis of the 1978 Nobel Prize in chemistry, can ease some of the symptoms associated with fibromyalgia. CoQ10 plays an essential role in the production of energy in the body.

The disease is a chronic pain disorder that also includes such symptoms as fatigue, headache, sleep disorders, and depression. Previous research has found that people with fibromyalgia are commonly deficient in CoQ10.

Mario D. Cordero, PhD, of the University of Seville, Spain, and his colleagues treated 40 women who had been diagnosed with fibromyalgia. They were given either 300 mg of CoQ10 or placebos daily for 40 days and were assessed at the beginning and end of the study using the Fibromyalgia Impact Questionnaire.

Overall symptoms of fibromyalgia decreased by about half among women taking CoQ10. Pain was reduced by 52 percent, fatigue by 47 percent, and morning tiredness by 44 percent.

Reference: Cordero MD, Alcocer-Gómez E, de Miguel M, et al. Can Coenzyme Q 10 Improve Clinical and Molecular Parameters in Fibromyalgia? *Antioxidants and Redox Signaling*, 2013; epub ahead of print. □

It's True: Don't Buy Groceries When You're Really Hungry

People often skip meals because of chaotic work schedules. While that's a bad habit in itself, it's a prescription for disaster when you go shopping.

Brian Wansink, PhD, and a colleague at Cornell University, Ithaca, N.Y., conducted two recent studies. In one, 68 subjects were asked to avoid eating for five hours before the study. Some were given crackers to eat (to sate their hunger) before

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Quick Reviews of Recent Research

• Sublingual allergy “drops” ease symptoms

In Europe, sublingual drops of an allergen are a common alternative to allergy shots to diminish allergy symptoms. The treatment involves placing drops of purified allergens, such as ragweed and mold, under the tongue. In the United States, the Food and Drug Administration has not approved sublingual immunotherapy, although some physicians use the technique “off-label.” Researchers from the Johns Hopkins University School of Medicine analyzed 63 studies, including 5,131 patients. They found that sublingual therapy was effective in improving asthma symptoms, and moderately effective in reducing allergic rhinitis and conjunctivitis, while also decreasing medication use and improving overall quality of life.

Lin SY. *JAMA*, 2013;309:1278-1288.

• Chelation therapy helps heart patients

Some alternatively minded physicians have long used chelation (*key-lay-shun*) therapy to remove toxic metals from the body and to treat coronary artery disease. Researchers from Mount Sinai Medical Center, Miami, Beach, and other institutions used chelation therapy to treat 1,708 middle-age and older men and women who had previously experienced a heart attack. The treatment consisted of regular infusions of EDTA, vitamin C, B vitamins, and electrolyte minerals, plus oral vitamins and

Grocery Shopping...

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being asked to shop in a simulated online grocery store. The store offered both lower calorie foods, such as fruits, vegetables, and chicken breasts, and higher calorie foods, such as candy, salty snacks, and red meat.

In a second study, Wansink monitored 82 people shopping at a grocery store when they were more likely to feel full (1-4 p.m.) and hungry (4-7 p.m.)

In both cases, when people were hungry, they were much more likely to buy less healthy, higher calorie foods.

“Even short-term food deprivation can lead to a shift in choices such that people choose less low-calorie, and relatively more high-calorie, food options,” wrote Wansink. “Given the prevalence of short-term food deprivation, this has important health implications.

Reference: Wansink B, Tal A. Fattening fasting: hungry grocery shoppers buy more calories, not more food. *JAMA Internal Medicine*, 2013; doi 10.1001/jamainternmed.2013.650. □

minerals. The researchers concluded that the therapy “modestly reduced” the risk of subsequent cardiovascular events.

Lamas GA. *JAMA*, 2013;309:1241-1250.

• Vitamin D helpful in Parkinson’s disease

Japanese doctors tested the effects of 1,200 IU daily of vitamin D or placebos on 56 patients with Parkinson’s disease. After 12 months of supplementation, vitamin D stabilized the progression of Parkinson’s disease, at least for a short time.

Suzuki M. *American Journal of Clinical Nutrition*, 2013;97:1004-1013.

• One soft drink daily boosts diabetes risk

The link between soft drink consumption and the risk of type 2 diabetes is largely based on studies conducted in the United States. Researchers at Imperial College, London, analyzed data from 12,403 people with diabetes and a random group of 16,154 people from eight European nations. They found that drinking one sugar-sweetened soft drink daily – or one extra soft drink each day – increased the risk of diabetes by 22 percent. This level of risk was comparable to the 25 percent increased risk found in American studies.

The InterAct Consortium. *Diabetologia*, 2013; doi 10.1007/s00125-013-2899-8.

• Coenzyme Q10 help in gum disease

Small studies have found that topical application of coenzyme Q10 (CoQ10) can lead to improvements in periodontal disease. In a study conducted in India, researchers treated 30 patients with plaque-induced gingivitis. CoQ10 was used either by itself or in conjunction with scaling and root planing. The researchers reported significant reductions in gingival bleeding and reduced plaque when CoQ10 was used with or without scaling and root planing.

Chatterjee A. *Journal of the Indian Society of Periodontology*, 2012;16: epub ahead of print.

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