

The Nutrition Reporter™

© Jack Challem March 2013 Vol 24 No 3



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

Antioxidants, Omega-3s Can Help People with Anxiety and Depression

Nobel Laureate Linus Pauling, Ph.D., noted that the brain is especially sensitive to its nutritional environment, and deficiencies can affect mood far more quickly than they do the heart. Three recent medical journal reports described how some nutrients can specifically influence mood.

Nutritionist Medhavi Gautam, PhD, of the Santokba Duriabhji Memorial Hospital in Jaipur, India, and her colleagues identified 40 patients with general anxiety disorder and 40 with depression, then compared them with 20 healthy subjects, all of whom were between ages 20 and 60.

Blood tests showed that people with anxiety or depression had significantly lower levels of vitamin A, C, and E compared with the healthy subjects.

Gautam and her colleagues then asked the patients to take 1,000 mg of vitamin C, 800 IU of vitamin E, and 600 mg of vitamin A daily for six weeks. By the end of the study, patients taking the supplements had significant improvements in psychiatric tests for anxiety and depression.

In a separate study, Felice N. Jacka, PhD, of Deakin University, Australia, and her colleagues analyzed the omega-3 intakes of 935 women who ranged from 20 to 93 years of age. The average intake of omega-3s was below recommended dietary levels.

Low levels of docosahexaenoic acid (DHA) were strongly and consistently related to the risk of anxiety disorders, while high levels of DHA appeared protective. People with the highest intake of DHA were half as likely to have anxiety, compared with those who consumed less of this omega-3 fat.

Depression was also associated with low intake of DHA, but the relationship was not as consistent as in the case of anxiety.

Finally, Louisa G. Silvia, PhD, of the Harvard Medical School, Boston, and her colleagues analyzed 23 studies of patients with bipolar disorder who were

treated with different nutritional supplements.

“The most extensively studied nutritional supplement in bipolar disorder is omega-3 fatty acids,” wrote Silvia. “While preliminary studies have demonstrated inconsistent outcomes, overall adjunctive omega-3 fatty acids could potentially reduce symptoms of bipolar depression in adults.”

She noted that chromium and inositol could also be helpful in bipolar depression. In addition, some studies have shown that choline improves mania in rapid cycling bipolar disorder, and that magnesium improves both agitation and mania.

References: Gautam M, Agrawal M, Gautam M, et al. Role of antioxidants in generalised anxiety disorder and depression. *Indian Journal of Psychiatry*, 2012;54:244-247. Jacka FN, Pasco JA, Williams LJ, et al. Dietary intake of fish and PUFA, and clinical depressive and anxiety disorders in women. *British Journal of Nutrition*, 2012; doi 10.1017/S00071145512004102. Sylvia LG, Peters AT, Deckersbach T, et al. Nutrient-based therapies for bipolar disorder: a systematic review. *Psychotherapy and Psychosomatics*, 2013;82:10-19. □

Perspectives

New Risks of Fructose

The Corn Refiners Association – yes, there is such a thing – would like you to eat lots more foods made with high-fructose corn syrup (HFCS). But then, the organization represents the financial interests of American corn producers and refiners. And it denies over and over again that there is a health problem with HFCS, which is probably the most common caloric sweetener added to processed foods and soft drinks.

Eating a lot of foods with either sucrose (table sugar) or HFCS isn't good for your health. (Eating tiny amounts of sucrose on occasion doesn't seem to bother most people.) But there's plenty of evidence that HFCS is a bit worse.

Sucrose, a single molecule, is metabolized in the gut, where it splits into equal parts of glucose and

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fructose. In experiments conducted more than 40 years ago, the late British physician John Yudkin, MD, found that nearly all of the health effects of sucrose were amplified by fructose alone. That was in the days before high-fructose corn syrup became an omnipresent additive to processed foods.

HFCS, however, is not a single molecule. It's a blend of 45 percent glucose and 55 percent fructose. It's sweeter than sucrose, and it has longer shelf life. As the fructose gets metabolized, it leads to higher production of triglycerides and increased insulin resistance, which are preludes to heart disease and type 2 diabetes.

In a recent study, described in the *Journal of the American Medical Association* (Page KA. *JAMA*, 2013;309:63-70), researchers used magnetic resonance imaging (MRI) scans of the brain to investigate what happens when people consume either glucose or fructose. Glucose led to brain changes that reduced the desire for food – in other words, it sated feelings of hunger. Fructose did not – meaning that it could lead to overeating. The results reflected how hungry the subjects said they felt after consuming the glucose or fructose.

Although the study was based on only 20 people, it's pretty damning evidence – and consistent with many other studies linking HFCS to the epidemic of obesity. –JC

Eating Habits Can Often Be as Important as Nutrition Itself

The quality of the foods you eat are of paramount importance, but so are your eating habits, according to two recent studies.

Frank Scheer, PhD, of Brigham and Women's Hospital, along with researchers from the University of Murcia, Spain, studied 420 overweight and obese men and women whose average age was 42 years. The subjects consumed about 1,400 calories daily, which is about half of what the typical American consumes.

But the timing of their principal meal strongly influenced their ability to lose weight. About half the subjects ate their main meal early and half ate it late. Over 20 weeks, dieters who ate before 3 p.m. lost an average of 22 pounds, while those eating after 3 p.m. lost an average of only 17 pounds.

In the other study, Xavier Alliot, PhD, of the Institute Paul Bocuse, and his colleagues compared the effect of a single breakfast with the same amount of food eating in portions throughout the morning.

Their subjects were 20 healthy young men of normal weight. On some mornings, the men received

a breakfast of 674 calories. On other mornings, they received the same number of calories, but it was given in four portions, each one hour apart from the other.

Then the subjects were allowed to eat from a lunch buffet. Men who had eaten several smaller portions were far less hungry at lunch time.

References: Garaulet M, Gómez-Abellán P, Alburquerque-Béjar JJ, et al. Timing of food intake predicts weight loss effectiveness. *International Journal of Obesity*, 2013: doi 10.1038/ijo.2012.229. Alliot X, Saulais L, Seyssel K, et al. An isocaloric increase of eating episodes in the morning contributes to decrease energy intake at lunch in lean men. *Physiology and Behavior*, 2013: doi 10.1016/j.physbeh.2013.01.009. □

Researchers Show Link Between Fast Food and Severe Asthma

The incidence of asthma and other allergy-related diseases has skyrocketed over the past 20 to 30 years. A new study lays the blame on children eating more fast foods and fewer fruits and vegetables.

Philippa Ellwood, MPH, of the University of Auckland, New Zealand, and her colleagues analyzed data from 319,000 teens from 51 countries and 181,000 younger children from 31 countries. The data were obtained from questionnaires filled out by the teens and by the parents of younger children.

Teens who ate fast food meals three or more times weekly were on average 39 percent more likely to have severe asthma. Younger children were 27 percent more likely to have severe asthma.

In contrast, children who ate fruit three or more times weekly were 11 percent less likely to develop asthma.

Teens and children eating fast foods were also more likely to have eczema and rhinoconjunctivitis, the latter consisting of nasal congestion, runny nose, and red eyes.

Reference: Ellwood P, Innes Asher M, Garcia-Marcos L, et al. Do fast foods cause asthma, rhinoconjunctivitis and eczema? Global findings from the international study of asthma and allergies in childhood (ISAAC) phase three. *Thorax*, 2013: doi 10.1136/thoraxjnl-2012-202285. □

Probiotic Supplements Reduce Seasonal Allergies and Asthma

Probiotics, the good bacteria that inhabit your digestive tract, are back in the news. This time, two teams of researchers have reported that probiotics help regulate the immune system and reduce allergy symptoms.

Anurag Singh, MD, PhD, of the Nestlé Research Center, Switzerland, and his colleagues studied 20 people with a history of seasonal allergies. Some

subjects took a probiotic supplement containing a form of *Bifidobacterium lactis* and others had a placebo during the peak of pollen season. The subjects' blood was analyzed at the beginning of the study, at four weeks, and again when the study ended at eight weeks.

Levels of Th-2 cytokines, which are involved in allergies, decreased significantly in people taking probiotics. In addition, their allergy symptoms were significantly lower during the second month of the study.

Meanwhile, Wen-Harn Pan, PhD, of National Taiwan University, and her colleagues asked 192 asthmatic children, ages 10-12 years old, to take daily supplements or placebos for 16 weeks. The supplements included a fruit and vegetable concentrate, fish oils, and probiotics.

Children taking the supplements benefited from a significant improvement in lung function and in general needed to use short-acting inhaled bronchodilators and corticosteroids far less, compared with the placebo group.

References: Singh A, Hacini-Rachinel F, Gosoni ML, et al. Immune-modulatory effect of probiotic *Bifidobacterium lactis* NCC2818 in individuals suffering from seasonal allergic rhinitis to grass pollen: an exploratory, randomized, placebo-controlled clinical trial. *European Journal of Clinical Nutrition*, 2013: doi 10.1038/ejcn.2012.197. Lee SC, Yang YH, Chuang SY, et al. Reduced medication use and improved pulmonary function with supplements containing vegetable and fruit concentrate, fish oil and probiotics in asthmatic school children: a randomised controlled trial. *British Journal of Nutrition*, 2012:1-11. □

Nutritional Counseling Helps Patients with Colorectal Cancer

No one benefits from poor eating habits, so the results of this study aren't entirely a surprise: colorectal cancer patients who received individualized nutrition counseling recovered more quickly from treatment and had a higher quality of life.

Paula Ravasco, PhD, of the University of Lisbon, Portugal, and her colleagues divided 111 patients into three groups. The first group received individualized nutrition counseling, the second received protein supplements (40 grams daily) and consumed their usual diet, and the third group consumed only their regular diet.

After an average follow up of six and one-half years, patients who received individualized nutrition counseling fared the best – 91 percent of them maintained adequate nutritional intake.

In contrast, side effects from radiation therapy were most severe in the third group, and overall quality of life was worse in the second and third groups. Poor nutritional status was associated with

about an 85 percent decrease in survival.

“Overall, the data indicate that early individualized counseling and education during radiotherapy is valuable for patients,” write Ravasco and her colleagues.

Reference: Ravasco P, Monteiro-Grillo I, Camilo M. Individualized nutrition intervention is of major benefit to colorectal cancer patients: long-term follow-up of a randomized controlled trial of nutritional therapy. *American Journal of Clinical Nutrition*, 2012;96:1346-1353. □

IV Fish Oils Reduce Inflammation in Patients After Heart Surgery

In a unique bridge between cardiology and nutritional medicine, researchers found that infusions of omega-3 fish oils gave patients a boost during and after coronary artery bypass surgery.

Mette M. Berger, MD, PhD, of the University of Lausanne, Switzerland, and her colleagues treated 28 patients whose average age was 65 years. Some of the patients received three intravenous infusions of 200 mg of emulsified fish oils 12 and two hours before and again immediately after undergoing bypass surgery. Other patients received a saline solution as a placebo.

Patients receiving the fish oils had significant increases in omega-3 levels in their blood and heart (based on a biopsy performed during surgery). Significantly, these patients had a smaller increase in post-surgery interleukin-6 – one of the most potent inflammation-promoting substances in the body – compared with patients receiving placebos.

In addition, blood triglyceride levels decreased after each fish oil infusion. A day after surgery, patients receiving fish oils had lower blood sugar, lactate, and blood carboxyhemoglobin levels – all positive signs – compared with the placebo group.

Reference: Berger MM, Delodder F, Liaudet, et al. Three short perioperative infusions of n-3 PUFAs reduce systemic inflammation induced by cardiopulmonary bypass surgery: a randomized controlled trial. *American Journal of Clinical Nutrition*, 2013;97:246-254. □

Carotenoids Associated with Lower Risk of Breast Cancer

A diet high in carotenoids – fat-soluble antioxidants found in vegetables and fruits – is strongly associated with a lower risk of one type of breast cancer.

A. Heather Eliassen, ScD, of Harvard Medical School, and her colleagues analyzed data from eight published studies on carotenoids and breast cancer risk. These studies included a total of 3,055 women

Quick Reviews of Recent Research

• Some fruits may lower heart attack risk

Researchers from Harvard University and the United Kingdom analyzed dietary data from 93,600 women who were ages 25 to 42 years when the study began. After 18 years of follow up, they noted that women who ate three or more servings of both blueberries and strawberries each week were 34 percent less likely to suffer a heart attack. Both fruits are rich in a family of antioxidant pigments called anthocyanins.

Cassidy A. *Circulation*, 2013;127:188-196.

• Lutein may enhance night vision

Although a vitamin A deficiency can cause night blindness, other nutrients affect visual acuity. Chinese researchers asked 120 people to take either 20 mg of lutein or placebos daily for one year. All of the subjects had spent an average of 10 hours driving each day in the two years before the study. Lutein supplements led to improvements in the macular pigment (in the retina), and overall there was a trend toward better visual acuity, especially in low light or dark conditions.

Yao Y. *Nutrition*, 2012: doi 10.1016/j.nut.2012.10.017.

• Omega-3 might reduce Alzheimer's risk

Researchers from France analyzed eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA) levels and performed brain scans over four years on 281 seniors. They found that higher levels of EPA but not DHA were associated with less atrophy in the

amygdala, a part of the brain that changes in the early stages of Alzheimer's disease. Changes in the amygdala are also involved in depression.

Samieri C. *Neurology*, 2012;79:642-650.

• Omega-3 and omega-6 affect telomeres

Telomeres are the protective tips of chromosomes, and shorter telomeres have been linked to a greater risk of age-related diseases and death. Researchers from the Ohio State University College of Medicine, Columbus, provided 106 subjects with one of three supplements to be taken daily for four months. Some of the subjects received 2,500 mg of omega-3s or 1,250 mg of omega-3s. A third group received placebos containing the proportion of fats found in the typical American diet. In people taking omega-3 supplements, the relative proportion of omega-6s decreased, and their telomeres increased in length.

Kiecolt-Glaser JK. *Brain, Behavior, and Immunity*, 2013;28:16-24.

• Nutrient may reduce schizophrenia risk

Schizophrenia is a mental illness characterized by delusions, hallucinations, and a breakdown of personality (not a "split" personality). Doctors at the University of Colorado School of Medicine asked 100 healthy pregnant women to take either 3,600 mg of phosphatidylcholine (PS) each morning and another 2,700 mg each evening, or placebos, starting during their second trimester. After delivery, the infants received either 100 mg of PS or placebos daily. Infants who had received PS had fewer brain changes that could be suggestive of developmental delays and potentially of schizophrenia risk. PS is built around the B-vitamin choline and is an essential compound in the brain. Choline is involved in a process called methylation, which helps regulate gene behavior.

Ross RG. *American Journal of Psychiatry*, 2013: doi 10.1176/appi.ajp.2012.12070940.

Carotenoids and Breast Cancer...

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who had been diagnosed with breast cancer and 3,956 control subjects without breast cancer.

Lycopene was associated with a 22 percent lower risk of breast cancer, while total carotenoids were associated with a 19 percent lower risk. Other carotenoids, including beta-carotene, alpha-carotene, and lutein/zeaxanthin were also associated with lower risk.

Beta-carotene was related to a 48 percent lower risk of estrogen-negative breast cancer, and alpha-carotene and lycopene were also associated with a lower risk of this type of breast cancer.

Although the researchers analyzed levels of total and individual carotenoids in the diets of subjects, all of these carotenoids may simply be markers for vegetable and fruit intake. Such foods are rich in a variety of nutrients, antioxidants, and fiber.

Reference: Eliassen AH, Hendrickson SJ, Brinton LA, et al. Circulating carotenoids and risk of breast cancer: pooled analysis of eight prospective studies. *Journal of the National Cancer Institute*, 2012;104:1905-1916. □

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