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Discerning Good Fats from Bad Fats: Which Ones Are Best for Your Heart?

For years, doctors and dietitians have suggested that people eat diets high in polyunsaturated fats (PUFAs) to reduce the risk of coronary heart disease. But the specific type of PUFAs you emphasize may either increase or decrease your risk of heart disease and death.

Christopher E. Ramsden, MD, of the U.S. National Institutes of Health, Bethesda, Maryland, and his colleagues used modern statistical methods to reanalyze data from the 1966-1973 Sidney (Australia) Diet Heart Study.

In that study, 458 men, ages 30 to 59 years, were asked to either follow their usual diet or to substitute safflower oil or safflower oil-rich margarine for saturated fat. Safflower oil is rich in linoleic acid, an omega-6 fat. It is also possible that the margarine contained trans fats, which are known to increase the risk of heart disease.

Men who substituted safflower oil for saturated fat had a significantly higher rate of heart disease and death, compared with men who ate their usual diets. Their rate of heart disease was 56 percent higher, and their rate of death was 50 percent higher.

In contrast, the omega-3 fish oils are well established for their ability to lower triglycerides, reduce inflammation, and prevent arrhythmias, according to a review article by Donald P. Jump, PhD, of the Linus Pauling Institute at Oregon State University, Corvallis.

Jump cited a variety of human clinical and population studies showing that omega-3s can help prevent cardiovascular diseases. He pointed out, however, that the use of statin drugs and other medical treatments may mask many of the benefits of omega-3 fish oils.

Plant sources of omega-3s, specifically alpha-linolenic acid, found in flaxseed oil and chia seeds, do not provide as many benefits as fish-source omega-3s. That's because the body does not efficiently convert alpha-linolenic acid to

eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA), the more biologically active forms of omega-3s.

Jump added that people who don't want to consume fish oils can obtain EPA and DHA from algae-source supplements.

References: Ramsden CE, Zamora D, Leelarthaepin B, et al. Use of dietary linoleic acid for secondary prevention of coronary heart disease and death: evaluation of recovered data from the Sydney diet heart study and updated meta-analysis. *BMJ*, 2013;346:e8707. Jump DB, Depner CM, Tripathy S. Omega-3 fatty acid supplementation and cardiovascular disease. *Journal of Lipid Research*, 2012;53:2525-2545. □

Perspectives CRP, Disease, Diet, and Stress

High-sensitivity C-reactive protein (CRP) measures the level of inflammation in your body. If you have obvious aches and pains, you probably don't need to get this blood test. But CRP is particularly helpful in measuring "silent" inflammation, the type you cannot feel. CRP is an excellent predictor of your cardiovascular risk. It also predicts survival in cancer patients.

A study in the January *British Journal of Nutrition* confirmed what many of us already knew. People who ate a lot of vegetables had lower levels of CRP, while those who consumed a lot of omega-6 fats had higher levels of CRP.

But diet is not the only way to manage CRP levels. If you smoke, you can stop smoking. If you're overweight, you can lose weight. And a brand new study in *Brain, Behavior, and Immunity* has found that mindful meditation also reduces inflammation.

Stress triggers the release of stress hormones, which can aggravate rheumatoid arthritis, asthma, and inflammatory bowel disease. Researchers from the University of Wisconsin taught subjects mindful meditation as a way of reducing their stress. After meditating, people had fewer disease symptoms. —JC

More research summaries on next page

No Big Surprise: Eating Sugary Foods Boosts Diabetes Risk

If you're a sugarholic, you've got a very high risk of developing type 2 diabetes.

While the link between diets high in refined sugars and other processed carbohydrates might seem obvious, scientific studies have yielded mixed findings. For this reason, Geoffrey Livesey, PhD, RPHNutr, of Independent Nutrition Logic, in Wymondham, United Kingdom, and his colleagues decided to analyze 24 studies that had investigated high-glycemic-load diets and diabetes risk.

The glycemic load (GL) refers to the effect a meal has on blood sugar. Refined sugars and other carbs are rapidly absorbed, leading to spikes in blood sugar, and are considered high GL. In contrast, high-fiber foods are absorbed slowly and considered low GL.

The 125,000 people in the studies consumed an average of 139 grams of sugars each day. As the amount of refined sugars consumed increased, the risk of diabetes also increased. For each 100 grams of sugars daily, people were 45 percent more likely to eventually develop type 2 diabetes.

In general, European Americans were more likely to develop diabetes, as were women.

In contrast, people who ate low GL diets were less likely to develop diabetes.

Reference: Livesey G, Taylor R, Livesey H, et al. Is there a dose-response relation of dietary glycemic load to risk of type 2 diabetes? Meta-analysis of prospective cohort studies. *American Journal of Clinical Nutrition*, 2013: doi 10.3945/ajcn.112.041467. □

Vegetarians Found to Have Lower Risk of Heart Disease

People who eat vegetarian diets have a significantly lower risk of fatal and nonfatal heart disease, according to a study conducted at the University of Oxford, United Kingdom.

Francesca L. Crowe, PhD, and her colleagues tracked the health of 44,561 men and women living in England and Scotland for almost 12 years. At the beginning of the study, 34 percent of the subjects described themselves as vegetarian – not eating any meat or fish.

The vegetarians tended to weigh less, had lower cholesterol levels, and had lower blood pressure compared with meat eaters.

Their risk of ischemic heart disease was 32 percent less, though this risk was attenuated slightly after the researchers factored in the subjects' weight.

Editor's note: Many studies have shown that

vegetarians tend to have a lower risk of heart disease, cancer, and other diseases when compared with meat eaters. However, disease risk may be influenced by other dietary factors besides meat. In addition, vegetarians may be more susceptible to toxic chemical exposures.

Reference: Crowe FL, Appleby PN, Travis RC, et al. Risk of hospitalization or death from ischemic heart disease among British vegetarians and nonvegetarians: results from the EPIC-Oxford cohort study. *American Journal of Clinical Nutrition*, 2013: doi 10.3945/ajcn.112.044073. □

Case History: High-Dose Fish Oils To Treat Traumatic Brain Injury

Traumatic brain injury is usually a cause of severe disability or death. In this case report, Michael Lewis, MD, of the Brain Health Education and Research Foundation, Potomac, Maryland, and his colleagues described a teenager who received a traumatic brain injury in a car accident. The boy was in a coma and treated, but the attending neurosurgeon believed that the injury was either likely "lethal" or would lead to a permanent vegetative state.

With the cooperation of the attending physician and the hospital pharmacy, the boy's father bought liquid fish oils, which were added to the boy's feeding tube. The fish oils provided almost 10,000 mg of eicosapentaenoic acid (EPA) and almost 7,000 mg of docosahexaenoic acid (DHA) daily, which continued for more than one year.

Meanwhile, the boy began therapy and had cognitive and physical improvements. Two years later, he still has speech and balance issues from the brain damage and walks with a cane. He currently lives at home and works with an athletic trainer. He has also started a part-time business as a disc jockey.

Lewis and his colleagues wrote that the omega-3s are essential for neurodevelopment, and that DHA specifically promotes the survival of neurons and the creation of new brain cells. In addition, the omega-3s reduce the production of proinflammatory compounds.

Reference: Lewis M, Ghassemi P, Hibbeln J. Therapeutic use of omega-3 fatty acids in severe head trauma. *American Journal of Emergency Medicine*, 2013;31:273.e5-8. doi 10.1016/j.amem.2012.05.014. □

Vitamin B1: A New Treatment for Ulcerative Colitis and Crohn's

Patients with ulcerative colitis and Crohn's disease often respond favorably to omega-3 fish oils or to a diet that eliminates wheat or dairy products. In a new study, high doses of vitamin B1 (thiamin) also led to significant improvements in patients.

Antonio Costantini, MD, of the Catholic University of Rome, Italy treated eight patients with ulcerative colitis and four with Crohn's disease – all of whom were suffering from fatigue. The patients were rated on a test used to measure Chronic Fatigue Syndrome, and their blood levels of vitamin B1 were found to be normal.

Still, Costantini provided the patients with oral thiamine supplements, with dosages ranging from 600 mg to 1,500 mg daily, depending on weight (132 pounds to 198 pounds).

Within 20 days, 10 of the patients had a complete remission of their fatigue, while two patients showed a nearly complete remission of fatigue. One patient taking high doses of thiamine developed a mild tachycardia, which was eliminated by reducing the dose slightly.

Reference: Costantini A, Pala MI. Thiamine and fatigue in inflammatory bowel diseases: an open-label pilot study. *Journal of Alternative and Complementary Medicine*, 2013; doi 10.1089/acm.2011.0840. □

Evidence Supports Vitamin D to Reduce Breast Cancer Risk

Scores of studies have shown that low levels of vitamin D are associated with a greater risk of numerous types of cancer, including breast cancer, whereas high levels of the vitamin appear to be protective. Two new studies shed a bit more light on the relationship.

Sharif B. Mohr, MPH, of the University of California, San Diego, and his colleagues compared blood levels of vitamin D in 600 mostly premenopausal women who had been diagnosed with breast cancer and 600 women free of the disease. Although there was no general association between vitamin D levels and cancer risk, there was a strong relationship in a subgroup of 124 women.

Mohr noted that women who had low vitamin D levels *three months before diagnosis* were more than three times more likely to be diagnosed with breast cancer.

“One possible explanation for this finding is that the [vitamin D level] during the 3-month interval preceding diagnosis is physiologically critical to the growth of the tumor,” wrote Mohr and his colleagues.

In a separate report, Mohr and his colleagues analyzed the “Hill criteria” for establishing low vitamin D as a cause of (rather than just an association with) breast cancer. The Hill criteria are based on a “temporal relationship” – that is, that the exposure or lack of exposure must precede the disease, the strength of the relationship, the presence

of a dose-response relationship, consistency, biological plausibility, the consideration of other causes, and that the disease can be prevented or treated by the agent, in this case vitamin D.

According to Mohr and his colleagues, the causal relationship between vitamin D and breast cancer risk meets all of the Hill criteria. “Based on the current scientific evidence,” they wrote, “vitamin D supplementation is an urgently needed, low cost, effective, and safe intervention strategy for breast cancer prevention that should be implemented without delay.”

References: Mohr SB, Gorham ED, Alcaraz JE, et al. Serum 25-hydroxyvitamin D and breast cancer in the military: a case-control study utilizing pre-diagnosis serum. *Cancer Causes and Control*, 2013; doi 10.1007/s10552-012-0140-6. Mohr SB, Gorham ED, Alcaraz JE, et al. Does the evidence for an inverse relationship between serum vitamin D status and breast cancer risk satisfy the Hill criteria? *Dermato-Endocrinology*, 2012;4:152-157. □

Taking Calcium and Vitamin D Lowers Risk of Hip Fractures

Taking calcium supplements along with modest amounts of vitamin D can substantially reduce the risk of hip fractures in postmenopausal women.

Ross L. Prentice, PhD, of the Fred Hutchinson Cancer Research Center, Seattle, and his colleagues analyzed data from 36,282 women who participated in the Women's Health Initiative study. The women took either 1,000 mg of calcium (as calcium carbonate) and 400 IU of vitamin D, or placebos, daily for an average of seven years.

None of the women were taking calcium or vitamin D supplements when the study began. The amount of vitamin D was later increased to 600 IU daily and then to 1,000 IU daily.

Women who consistently took the supplements for at least five years were 38 percent less likely to have a hip fracture.

Reference: Prentice RL, Pettinger MB, Jackson RD, et al. Health risks and benefits from calcium and vitamin D supplementation: women's health initiative clinical trial and cohort study. *Osteoporosis International*, 2013;24:567-580. □

Prenatal Folic Acid Supplements May Reduce Risk of Autism

Women who take folic acid supplements before and after becoming pregnant have a lower risk of giving birth to children who eventually develop the most severe form of autism.

Pal Suren, MD, of the Norwegian Institute of Public Health, Oslo, and his colleagues studied

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Quick Reviews of Recent Research

• Low vitamin D is factor in type 2 diabetes

A study by South Korean researchers links vitamin D deficiency to a significantly greater risk of developing type 2 diabetes. The researchers studied 1,080 people who had at least one risk factor for diabetes. After an average follow up of two and one-half years, people with severe vitamin D deficiency were more than three times more likely to develop diabetes compared with those who had higher levels of the vitamin.

Lim S. *American Journal of Clinical Nutrition*, 2013;97:524-530.

• Probiotics resolve vaginal infections

Doctors from Croatia treated 544 women with bacterial vaginitis with either daily probiotics (*L. rhamnosus* and *L. reuteri*) or placebos for six weeks. By the end of the study, 61 percent of women receiving the probiotics no longer had bacterial vaginosis, compared with only 27 percent of those taking placebos. Another follow up, 12 weeks after the study began and six weeks after women stopped taking the supplements, found that 51 percent of women taking probiotics were still free of infection. Only 27 percent of women taking placebos were infection free at this point.

Vujic G. *European Journal of Obstetrics, Gynecology, and Reproductive Biology*, 2013: epub ahead of print.

• Vitamin K1 may protect against diabetes

Spanish researchers analyzed dietary vitamin K1 levels in 1,069 people who did not have type 2

diabetes when their study began. After 5.5 years of follow up, people who had low vitamin K1 levels had a higher risk of developing diabetes. For every 100 mcg increase in daily dietary intake of vitamin K1, people had a 17 percent lower risk of diabetes. People who increased their vitamin K1 intake during the course of the study were 51 percent less likely to develop diabetes. Vitamin K1 is found in leafy green vegetables.

Ibarrola-Jurado N. *American Journal of Clinical Nutrition*, 2012;96(5):1113-8.

• Green tea enhances brain activity

Green tea is known to have positive effects on mood and cognition. Chinese scientists fed laboratory mice epigallocatechin gallate (EGCG), an extract of green tea, and compared them to a control group that did not receive EGCG. Mice receiving EGCG had brain changes indicating the creation of new brain cells. The mice also had significant improvements in cognition and were able to find a hidden object faster than mice that did not receive the green tea extract.

Wang Y. *Molecular Nutrition and Food Research*, 2012; 56:1292-1303.

• Blacks more likely to be vitamin D deficient

A University of Florida study has found that black Americans are more likely to be deficient in vitamin D and, partly as a consequence, experience more osteoarthritis pain. The researchers compared 45 blacks and 49 whites, with an average age of 56 years, with symptomatic knee osteoarthritis. Eighty-four percent of black subjects had vitamin D levels less than 30 ng/ml, compared with only 51 percent of white subjects. The researchers attributed the higher level of pain in the black subjects to their low vitamin D levels. Other studies have found that vitamin D deficiency can impact back pain.

Glover TL. *Arthritis and Rheumatism*, 2012;64:3926-3935.

Folic Acid and Autism Risk...

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85,176 children who were born between 2002 and 2008. Suren investigated which of the mothers took folic acid supplements four weeks before and eight weeks after the start of pregnancy.

The children of mothers who had taken folic acid supplements were 40 percent less likely to develop autistic disorder. Still, the overall risk of autism disorder was very low – one-tenth of a percentage point versus two-tenths of a percentage point among children whose mothers did not take folic acid.

The findings are noteworthy because folic acid deficiency among pregnant women is a risk factor for children developing neural-tube defects, such as spina bifida. The same window of time – several weeks before and about two months after conception – is the critical time for folic acid supplementation.

Reference: Suren P, Roth C, Bresnahan M, et al. Association between maternal use of folic acid supplements and risk of autism spectrum disorders in children. *JAMA*, 2013;309:570-577. □

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