

Fish Oils and Mercury

Summaries of the latest research concerning fish oils and mercury

Fish, mercury, and heart disease

BALTIMORE, MARYLAND. Several studies have shown that regular fish consumption protects against cardiovascular disease. Other studies have shown that consuming mercury-contaminated fish increases the risk of coronary heart disease. The beneficial effect of fish consumption is believed to be due to the presence of the omega-3 fatty acids, eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA) in the tissue of fish and shellfish. Two recent studies have attempted to answer the question "Are the beneficial effects of fish oils (EPA and DHA) outweighed by the negative effects of mercury"? The first study, carried out by a team of researchers from eight European countries, Israel and the United States, involved 684 men who had suffered a first non-fatal heart attack and 724 matched controls. All participants had their mercury level measured in toenail clippings and their level of DHA measured in a fat tissue sample taken from the buttock. Participants with a mercury level of 0.66 mcg/gram were found to have twice (odds ratio of 2.16) the risk of having a first heart attack when compared with participants having a mercury level of 0.11 mcg/gram. This risk assessment was arrived at after adjusting for age, DHA level in adipose tissue, body-mass index, waist:hip ratio, smoking status, alcohol intake, HDL cholesterol level, diabetes, history of hypertension, family history of heart attack, blood levels of vitamin E and beta-carotene, and toenail level of selenium. The research team also found that participants with a high (0.44% of total fatty acids) fat tissue content of DHA had a 41% lower risk of having a first heart attack than did those with a low (0.10% of total fatty acids) fat tissue level of DHA. This risk assessment was arrived after adjusting for all other known risk factors including toenail mercury level. The researchers point out that the main sources of mercury are occupational exposure (dentists), exposure to silver-mercury amalgam in dental fillings, and fish consumption. They conclude that the health benefit of fish consumption is significantly diminished if the fish is high in mercury. They also confirm the cardioprotective effect of fish oils (DHA). The second study was part of the Health Professionals Follow-Up Study begun in 1986 as a cooperative venture between the Harvard School of Public Health, the Brigham and Women's Hospital, and Harvard Medical School. The study involved 33,737 male health professionals who had toenail clippings analyzed for mercury in 1987. After 5 years of follow-up 470 participants had been diagnosed with coronary heart disease. The researchers observed that dentists, who are habitually exposed to mercury, had toenail mercury levels (0.91 mcg/gram) that were twice as high as the levels found in non-dentists (0.45 mcg/gram). They also found a direct relationship between fish consumption and mercury level with participants consuming an average of 357 grams (3/4 lb) of fish per week having a level of 0.75 mcg/gram while those who consuming 145 grams (1/3 lb) per week had a level of 0.29 mcg/gram. After adjusting for age, smoking and other risk factors for heart disease the researchers conclude that there is no clear association between total mercury exposure and the risk of coronary heart disease, but that a weak relation cannot be ruled out. *Guallar, E, et al. Mercury, fish oils, and the risk of myocardial infarction. New England Journal of Medicine, Vol. 347, November 28, 2002, pp. 1747-54* *Yoshizawa, K, et al. Mercury and the risk of coronary heart disease in men. New England Journal of Medicine, Vol. 347, November 28, 2002, pp. 1755-60* *Bolger, PM and Schwetz, BA. Mercury and health. New England Journal of Medicine, Vol. 347, November 28, 2002, pp. 1735-36/*

Editor's comment: The two studies clearly do not agree as to whether high mercury levels are associated with an increased risk of coronary heart disease. I am inclined to believe that they are. Furthermore, there is compelling evidence of significant associations between high mercury levels and Alzheimer's disease, Parkinson's disease, congestive heart failure, kidney damage, hearing loss, and high blood pressure. So definitely, mercury, from whatever source, is a very

bad actor and should be avoided. The joint European/Israeli/US study clearly confirms that DHA (fish oil) is protective against a first heart attack, so regular consumption of low-mercury-level fish is still a healthy option. An alternative approach to obtaining DHA (and EPA) on a regular basis is to supplement with 1 gram/day of a high quality, molecular distilled, non-rancid fish oil containing a minimum of 220 mg EPA and 220 mg DHA. Reliable sources of such fish oils can be found at www.coromega.com and at www.consumerlab.com/results/omega3.asp To be on the safe side it is best to eat fish and shellfish with an average mercury content of less than 0.10 ppm. Unfortunately, there are not too many species left that fulfill this requirement. King crab, scallops, catfish, salmon (fresh, frozen and canned), oysters, shrimp, clams, saltwater perch, flounder, and sole are all good choices. Salmon is my favourite because of its combination of a low mercury content with a high level of beneficial EPA and DHA. The following fish species should be avoided: tilefish, swordfish, king mackerel, shark, grouper, tuna, American lobster, halibut, pollock, sablefish, and Dungeness and blue crab. Limited sampling of the following also indicated high mercury levels: red snapper, marlin, orange roughy, saltwater bass. Atlantic cod, haddock, mahi mahi, and ocean perch have mercury levels around 0.18 ppm, so should be eaten in moderation. For more on mercury content of fish see www.cfsan.fda.gov/~frf/sea-mehg.html

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