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## About Essential Fatty Acids and Fish Oil

By now, most of us have heard of essential fatty acids (EFAs) and their potential health benefits. They're said to sustain cognitive function and memory, benefit the heart and immune system, aid in cell reproduction and repair, and even help balance hormones. Fish oil, duly noted by the medical community as having similar benefits, contains high levels of omega-3 essential fatty acids, thus establishing the link between a daily regimen of fish oil and good health. Fish oil is sold in the U.S. as a dietary supplement and comes in both liquid and capsule form. What are essential fatty acids? Essential fatty acids are unsaturated fats typically found in the oils of vegetables, certain nuts and seeds and some fish. They're said to benefit health more than the saturated fats found in meat and dairy products and may even have a positive impact on cholesterol and triglyceride levels in the blood. Essential fatty acids are referred to as "essential" because they must be obtained through diet and are essential to the normal growth and function of muscles, nerves, cells and organs in humans. There are two families of essential fatty acids, omega-3 fatty acids and omega-6 fatty acids. Omega-3 fatty acids – the fatty acids found in fish oil Omega-3 fatty acids are a type of polyunsaturated fat present in many coldwater fish including trout, salmon, sardines, anchovies, herring, mackerel, tuna and cod. The two most potent forms of omega-3 fatty acids are eicosapentaenoic acid (EPA) and docosahexanoic acid (DHA), both known as "good fats" – unlike saturated fats, which when consumed in excess can lead to cardiovascular problems, neural and brain disorders. EPA helps to produce the prostaglandins (hormone-like substances) which help control blood-clotting and arterial functions. EPAs may also help to lower serum triglyceride levels. DHA is a major component of human brain and retinal tissue and aids the transmission of nerve impulses. The term "omega-3 essential fatty acid" has become synonymous with "fish oil" in modern American marketing literature. Sources of omega-3 essential fatty acids other than fish oil include, but are not limited to: • Avocadoes (whole or oil) • Brazil nuts • Flaxseed • Flaxseed oil • Fortified milk products • Hempseeds • Hempseed oil • Omega-3 eggs • Pumpkin seeds • Sesame seed • Soybean oil • Walnuts • Wheat germ oil Omega-6 fatty acids – not found in fish oil Omega-6 EFAs are found in animal products such as dairy and meat and are common in cooking oils such as safflower, olive, sunflower, hemp, soybean, pumpkin, sesame, walnut and flaxseed oils. Too many omega-6 EFAs, say nutritionists, can throw off the balance of prostaglandins and lead to health problems. Experts recommend a ratio of three parts omega-3 essential fatty acids to every one part omega-6 fatty acid in the diet. Research indicates that Americans consume far more omega-6 fatty acids than omega-3 as a result of overindulging in fried foods, red meat and cheese. Omega-6 fatty acids are dependent on interactions with omega-3 essential fatty acids in order to benefit good health, which is why a balance of the two is crucial in the diet. The American Heart Association cautions against a high dietary intake of omega-6 fatty acids as it can lead to the development of gallstones and promote tumors. Prostaglandins Prostaglandins encompass a number of hormone-like substances found in every cell in the body. They're critical to the dilation and constriction of blood vessels, the contraction and relaxation of muscles, the regulation of blood pressure and the modulation of inflammation. Prostaglandins are needed for overall good health and maintenance and must be replenished constantly. It's easy to understand why having a good balance of prostaglandins in the body is essential to well-being. Where does fish oil come from? Most fish oil is extracted from the fatty flesh of the fish, unless a product specifically states otherwise, as is the case with cod liver oil or shark liver oil – extracted from fish liver. Nutritious fish oil is usually derived from deep, coldwater fish and those swimming in the wild (wild fish eat other fish and marine animals and vegetation to survive, whereas farm-raised fish are typically fed some type of less nutritious, less expensive, commercial-grade pellet). Some experts say the best fish comes from the deep Atlantic of Norway and other Scandinavian countries: the deeper and colder the water, say experts, the less chance of toxins such as mercury, lead, dioxins, furans and PCBs occurring in the fish oil. Fish from eastern Pacific waters is known to contain elevated levels of mercury. Fish oil supplements – good ones / bad ones "Product disclosure" is the operable phrase when seeking out nutritious fish oil supplements. From what kind of fish is the oil extracted and from where is it extracted naturally through pressing or with a centrifuge; or are petrochemical solvents such as hexane used to extract the oil from the source? How is the fish oil refined? Is it molecularly distilled, which to date is the most reliable form of fish oil purification, or does the label read something like "extra-distilled" or "super-distilled?" Such terms have no bearing on quality or safety. Because the hundreds of thousands of fish oil supplements on the market remain unregulated by the FDA, the safety, consistency, efficacy and strength of these products varies immensely among brands. When reading fish oil supplement labels: • Make sure the type of fish from which the fish oil is extracted is listed. • Look for terms "coldwater," "deep water" and "wild" as opposed to "farm-raised." • In what ocean or hemisphere was the fish caught? North Atlantic, deep, coldwater is said to be the most nutritious. • Make sure the fish oil is molecularly distilled, which better ensures the absence of PCBs, heavy metals and other contaminants. • What parts of the fish were used? Fish oils extracted from fish liver may be higher in heavy metals and contaminants. • What fish oil extraction method was used? Cold or modified expeller pressing means that the oil was produced without damaging temperatures or unnecessary pressure. Marketing claims that have no defined meaning in relation to fish oil supplements, and which often mislead consumers, include: • Ultra-pure • Professional grade • Pharmaceutical grade • High-potency • Super-distilled • Natural • Extra-distilled • Best • Finest • Highest quality • Pure • Purest • Purified Essential fatty acid health benefits and risks Few argue the benefits of fish oil and essential fatty acids in the diet. Clinical studies have demonstrated that the omega-3 fatty acids can benefit cardiovascular health and that "good unsaturated fats" derived from vegetables and fish are far more nutritious than "bad saturated fats" which come from red meat, animal products and dairy. The cardiovascular benefits to balancing omega-3 and omega-6 fatty acids in the diet include lowered serum cholesterol, decreased serum triglycerides and reduced platelet aggregation. Although many fish oil supplement companies claim that fish oil supplementation may aid brain function and strengthen the immune system, a complete body of evidence has yet to be produced. Along with the health benefits of fish oil come some risks, most associated with taking too high doses of fish oil or having dangerously high levels of omega-3 and omega-6 essential fatty acids in the blood. Some of these risks can include: • Thinning of the blood and reduced ability of the blood to clot. • Increased risk of bleeding. • Too large doses can increase glucose levels in persons with already elevated blood sugar levels. • In excess, fish oil may suppress the immune system. • Increase the occurrence of nosebleeds and easy bruising. • Upset stomach, nausea, diarrhea and belching. • Poisoning from heavy metals, PCBs, dioxins and pesticides. Experts and nutritionists are convinced that the health benefits of fish oil far outweigh the risks. However, many warn that fish oil shouldn't be taken with blood-thinning medication such as warfarin or aspirin and shouldn't be taken by anyone with bleeding disorders or uncontrolled hypertension. It is highly advisable to consult a physician before supplementing a diet with fish oil. EPAs, DHAs, efficacy and the FDA In September of

2004, the FDA announced they would allow a qualified health claim for reduced risk of coronary heart disease for conventional foods that contain EPA and DHA omega-3 fatty acids as outlined in FDA's "Interim Procedures for Qualified Health Claims in the Labeling of Conventional Human Food and Human Dietary Supplements." Notwithstanding inconclusive research at the time of release, the FDA said it would exercise its enforcement discretion with respect to the following qualified health claim: "Supportive but not conclusive research shows that consumption of EPA and DHA omega-3 fatty acids may reduce the risk of coronary heart disease. One serving of [name of food] provides [x] grams of EPA and DHA omega-3 fatty acids. [See nutrition information for total fat, saturated fat and cholesterol content.]" In 2000, the FDA announced a similar qualified health claim for dietary supplements containing EPA and DHA omega-3 fatty acids and the reduced risk of coronary heart disease (CHD). The FDA recommends that consumers not exceed more than a total of three grams per day of EPA and DHA omega-3 fatty acids, with no more than two grams per day from a dietary supplement. Be sure to shop at [www.vitacost.com](http://www.vitacost.com) for all your essential fatty acid and fish oil needs! References 1. Supplement from the sea: the fat from fish oil can benefit your heart, eyes, joints, and brain. Tom Weede. *Natural Health*. Oct 2007 v37 i9 p105 (2). 2. Omega medicine. Is fish oil good for what ails you? Bonnie Liebman. *Nutrition Action Healthletter*. Oct 2007 v34 i8 p1 (5). 3. The government's big fish story: Pick the perfect fish oil supplement. *Men's Health*. July-August 2007 v22 i6 p158. 4. Fish oil and brain development. Alan R. Gaby. *Townsend Letter: The Examiner of Alternative Medicine*. Oct 2007 i291 p49 (2). 5. Effects of fish oil supplementation on myocardial fatty acids in humans. R.G. Metcalf, M.J. James, R.A. Gibson. *Alternative Medicine Review*. Sept 2007 v12 i3 p307 (1). 6. Essential fatty acids. Douglas Dupler and Teresa G. Odle. *The Gale Encyclopedia of Alternative Medicine*. Ed. Jacqueline L. Longe. 2nd ed. Detroit: Gale, 2005. 4 vols. Updated July 1, 2006. 7. Mighty omegas (ways to score more essential fats). Nancy Duncan. *Women's Health*. Dec 2006 v3 i10 p47. 8. Essential fatty acids and eicosanoids: their role in preventing inflammation, cardiovascular disease and cancer. James Meschino. *Dynamic Chiropractic*. Dec 3, 2007 v25 i25 p28(3). 9. Fish oil. Mai Tran and Teresa Odle. *The Gale Encyclopedia of Alternative Medicine*. Ed. Jacqueline L. Longe. 2nd ed. Detroit: Gale, 2005. 4 vols. Updated July 1, 2006. 10. On call: Fish oil revisited. *Staying Healthy from the Faculty of Harvard Medical School*. August 21, 2006 pNA. 11. By the way, doctor: How much fish oil should I be taking? *Staying Healthy from the Faculty of Harvard Medical School*. August 21, 2006 pNA.

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