

Fish Oil Provides a Sea of Benefits

By Teresa Esquivel, Managing Editor

Research supporting the health benefits of fish oil is overwhelming. The first study, conducted decades ago, linked the low incidence of heart disease among Greenland's Inuits to that population's diet of fatty marine animals and fish. More recently, study results presented at the 2009 Experimental Biology annual meeting indicate that fish oil protects against neurodegenerative diseases. In between, scientists from around the globe have linked the long-chain omega-3 fatty acids in fish oil—docosahexaenoic acid (DHA) and eicosapentaenoic acid (EPA)—to a range of benefits from head to toe.

Ever-emerging benefits

“Omega-3 fatty acids from fish oil are beneficial for cardiovascular health, immune function, brain health, psychiatric disorders and developmental disorders, like ADHD and autism,” says Mary Ann Siciliano, national sales manager, Arista Industries, Inc., Wilton, CT. “They have been used for the treatment of various diseases/disorders, such as arthritis, circulatory problems and depression, and are also being looked at for the treatment of cancer.”

DHA and EPA have also shown benefits for allergies, asthma, psoriasis and arthritis. They may help with weight loss, metabolic syndrome and anxiety, and may contribute to bone health and improved cognitive performance, but more research is needed to validate the current theories. And that's just for humans. The evidence is also mounting for similar omega-3 benefits for dogs and cats.

Dietary advice

The list of potential health benefits keeps growing, but by 2004 the evidence was persuasive enough for FDA to grant a qualified health claim for omega-3s: “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.]”

Although recommended daily doses of omega-3s vary, FDA suggests no more than 3 grams per day of EPA and/or DHA, with no more than 2 grams per day from a dietary supplement.

Cold-water, fatty fish like mackerel, lake trout, herring, sardines, albacore tuna and salmon are high in EPA and DHA. And, some would presume, high in mercury content as well. The American Heart Association (AHA), Dallas, acknowledges that most fish contain some levels of mercury, PCBs (polychlorinated biphenyls), dioxins and other environmental contaminants. According to AHA, the highest levels of mercury are found in large species such as shark (0.99 ppm), swordfish (0.97 ppm) and tilefish (1.45 ppm). AHA maintains that, particularly for middle-aged and older men and postmenopausal women, mercury levels in fatty, cold-water species are outweighed by the benefits of omega-3s, and recommends that those without coronary heart disease (CHD) consume such fish at least two times a week, and 1 gram per day of EPA and/or DHA from fatty fish for those diagnosed with CHD.

This poses a stomach-turning problem for those who don't eat fish. Supplements are one option for getting a daily dose of omega-3, as are foods fortified with DHA and/or EPA ingredients, or food fortified with fish oil.

Fish oil ingredients on the market derive from a variety of species, including anchovies, mackerels, herring, sardines, menhaden, smelt and tuna. The first four types contain less than 0.09 parts mercury per million, according to the Natural Resources Defense Council, New York. The omega-3 content varies by species, as does the ratio of DHA to EPA. Typically, the ratio is 1:1, with a fatty-acid profile of 10% DHA, 10% EPA. Fish oil is refined to remove free fatty acids, and bleached and deodorized to remove contaminants. Steam deodorizing ensures it is not degraded. Commercial fish oils present food manufacturers with a range of options, depending on their application and fortification goals.

Lipid Nutrition, Channahon, IL, for example, offers a fish oil with 23% EPA and 16% DHA, and one with 6% EPA and 41% DHA.

Arista Industries offers fish oils with 30% or 50% total omega-3 content, and tuna oil with 25%, 30% or 40% DHA.

Omega Protein, Inc., Houston, offers a fish oil ingredient with an average 35% total EPA and DHA content.

Currently, fish oil is being incorporated into baby formula, dairy and bakery products, cereals, sauces, and salad dressings, according to Siciliano. “The biggest challenges in using omega-3 fish oils are stability, odor and taste,” she says, as the healthful fatty acids are unsaturated and subject to oxidation. “The taste and odor can be masked with a flavor, preservatives or other ingredients, and refrigeration helps with stability, but a product packed in a closed system or without constant exposure to air will have better stability.” Fish oil in powder form can make inclusion in dry products and bakery items much easier.

Fatty Acid Forecast

As positive research mounts and consumer awareness grows, so has the market for foods fortified with omega-3 fatty acids. In its report, “Omega Fatty Acids: Trends in the Worldwide Food and Beverage Markets,” Packaged Facts, Rockville, MD, estimates the global market for omega-3-fortified foods grew 34% between 2007 and 2008, from an estimated \$3 billion in 2006 to almost \$5 billion in 2007—and growing to a projected \$8 billion by 2012.