



## THE IMPORTANCE OF EPA AND DHA OMEGA-3 FATTY ACIDS TO CARDIOVASCULAR HEALTH

### *The Fishy Taste of Fish Oils—Problem Solved!*

Years of mounting research and clinical and epidemiological studies about the omega-3 fatty acids have brought many experts in the medical and nutrition communities to the same conclusion: certain omega-3 fatty acids, consumed from either fish or fish-oil capsules, appear to offer significant cardiovascular health benefits. In fact, in September 2004, the Food & Drug Administration (FDA) sent a letter concluding that there is sufficient evidence for conventional foods and dietary supplements that contain eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA) omega-3 fatty acids to use a qualified health claim and would exercise enforcement discretion for the following 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.” Qualified Health Claims are based on scientific evidence that is credible, but that does not meet the “significant scientific agreement” standard and include a disclaimer or other qualifying language to prevent consumers from being misled about the level of support for the claim or other important facts.<sup>1</sup> The FDA reaches its conclusions for a claim from the review and analysis of intervention studies, population studies, as well as information gathered from meta-analyses and review articles. In considering omega-3 fatty acids, the FDA also examined the effects of diets containing servings of fish and/or fish oil versus diets with little to no fish-derived omega-3 fats on cardiovascular risk factors, such as blood LDL, total cholesterol, and triglyceride levels, and occurrence rates of a second myocardial infarct.<sup>2-7</sup> While not all of the studies reviewed by the FDA presented conclusive evidence of a positive effect on cardiovascular risk factors, sufficient support for the incorporation of EPA and DHA sources into the diet was found. Coronary heart disease is a major health problem in the United States, having caused one out of every five deaths in 2004, and remains the leading cause of death for American men and women.<sup>8</sup>

The typical American diet includes a high intake of meat and omega-6 vegetable oils and a low consumption of fish, leaving us with a deficiency of omega-3 fatty acids. Linoleic acid, an essential omega-6 fatty acid, is the precursor for the formation of arachidonic acid, the substrate for inflammatory prostaglandins, leukotrienes, and thromboxane.<sup>10</sup> Plant-sourced omega-3 fatty acids as found in the oil of flax seed and rapeseed (canola oil) are short chain omega-3 fatty acids and do not provide the longer chain DHA and EPA fatty acids.<sup>10</sup> While these shorter chain omega-3 fatty acids are indeed important to overall health and physiology, research indicates

Fish High in Omega-3 <sup>9</sup>	Serving Size	Milligrams DHA	Milligrams EPA
Anchovy (canned)	3 oz.	1,098	648
Atlantic Mackerel	6 oz.	1,188	856
Atlantic Salmon (wild)	6 oz.	2,429	698
Pink Salmon (wild)	6 oz.	1,276	913
Sockeye Salmon (wild)	6 oz.	1,190	901
Sardines (canned)	3 oz.	865	804
Rainbow Trout (wild)	6 oz.	884	795

DHA and EPA provide a higher degree of support for the heart and other organs than the short chain omega-3 fatty acids.<sup>11</sup> Oddly enough, while these omega-3 fatty acids are essential to our metabolism, the human body cannot make them in any significant amounts.<sup>12</sup> Alpha-linolenic acid (ALA), abundant in certain plant oils and even found in green leafy vegetables, is an 18-carbon omega-3 which can serve as the precursor for synthesis of 20-carbon EPA and 22-carbon DHA by humans; however, this conversion is quite inefficient. In men, the conversion has been shown to be approximately 8% for EPA and < 0.1% for DHA, while in women, as much as 9% of ALA can be converted to DHA, presumably due to maternal requirements for fetal development.<sup>12</sup>

Over time, deficiency of omega-3 fatty acids can increase the risk of serious cardiovascular events, and a growing body of evidence suggests that shortages of omega-3 can contribute to other health issues. Studies such as the Zutphen Study,<sup>13</sup> the

Honolulu Heart Program,<sup>14</sup> and GISSI-Prevenzione<sup>15</sup> reported an inverse relationship between fish consumption and myocardial-related sudden death. Studies have also associated a diet that included DHA and EPA-rich fish oils slightly, but nonetheless significantly, reduced systolic and diastolic blood pressures<sup>16</sup> and can reduce levels of blood triglycerides.<sup>17</sup> A 2008 study in the *British Journal of Nutrition* by Ninio *et al.*, reported improved heart rate variability and lowered heart rate in response to exercise in overweight adults receiving 6 grams/day of fish oil (DHA 1.56 g/d, EPA 0.36 g/d) compared to the control group receiving sunflower oil. These findings can be of importance as decreased heart rate variability is associated with and a predictor of cardiac death.<sup>18</sup>

The Dietary Guidelines for Americans has been published every five years since 1980 by the Department of Health and Human Services (HHS) and the Department of Agriculture (USDA). The most recent report, published in 2005, states that, "Limited evidence suggests an association between consumption of fatty acids in fish and reduced risks of mortality from cardiovascular disease for the general population."<sup>19</sup> The American Heart Association (AHA) currently advises the consumption of a total of about one gram per day of the omega-3 fatty acids, EPA and DHA, preferably from fatty fish, or in capsule form, after consulting with his or her physician, by those individuals with coronary heart disease. The AHA also advises that patients taking more than three grams of omega-3 fatty acids from capsules should do so only under a physician's care. There is concern that high intakes could potentially pose a bleeding risk in some people.<sup>20</sup>

### Convenient Chewable Softgel with Refreshing Peppermint Flavored Fish Oil and No Fishy Repeat!

**OmegaMint™**, a product of **Nutramax Laboratories, Inc. (Edgewood, MD)**, is a specially formulated fish oil heart health supplement rich in the two most



*OmegaMint™ from Nutramax Laboratories, Inc. is a chewable softgel heart health supplement that is perfect for individuals who don't like to swallow pills or capsules. OmegaMint's refreshing, peppermint-flavored fish oil has no fishy repeat.*

important omega-3 fatty acids, EPA and DHA, which help support the cardiovascular system. Many people have an objection to taking fish oil because of its unpleasant taste and odor or because of a fishy repeat. OmegaMint softgels are filled with deodorized fish oil and pure peppermint oil that offers a unique natural peppermint flavor, which minimizes any fishy taste or odor and has no fishy repeat. The softgels are convenient and easy-to-swallow or chew, perfect for those individuals who do not like to or are unable to swallow pills. OmegaMint fish oils are sourced only from salmon and other cold-water fish. Each daily serving provides 2,250 mg of fish oil concentrate, containing 440 mg EPA and 270 mg DHA (measured by AOCS method Ce 1e-91). There are no known serious side effects or interactions of OmegaMint Fish Oil supplements with any drug or other nutritional supplement, and there are no known contraindications when taking omega-3 fatty acids at the suggested levels. The fish oil in OmegaMint is tested for the presence of heavy metals

and other pollutants and is below the limits recommended by the Council for Responsible Nutrition (CRN) for mercury and lead levels. ♦

These statements have not been evaluated by the Food & Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.

### To Learn More

For more information about OmegaMint™ Fish Oil or other products from **Nutramax Laboratories, Inc.**, please call 1-888-886-6442, or visit [www.omega-mint.com](http://www.omega-mint.com).

### References:

- Scientific Review of Qualified Health Claims (QHC). Barbara O. Schneeman, Ph.D. Office of Nutritional Products, Labeling and Dietary Supplements, Center for Food Safety and Applied Nutrition, Food and Drug Administration. Can be accessed at: <http://www.fda.gov/ohrms/DOCKETS/dockets/05n0413/05n0413-ts00002-schneeman.pdf>
- Albert CM, Campos H, Stampfer MJ, *et al.* Blood levels of long-chain n-3 fatty acids and the risk of sudden death. *N.Eng. J. Med.* 2002;346:1113-1118.
- Hu FB, Cho E, Rexrode KM, *et al.* Fish and long-chain -3 fatty acid intake and risk of coronary heart disease and total mortality in diabetic women. *Circulation* 2003;107:1852-1857.
- Laidlaw M and Holub BJ. Effects of supplementation with fish oil-derived n-3 fatty acids and linolenic acid on circulating plasma lipids and fatty acid profiles in women. *Am. J. Clin. Nutr.* 2003;77:37-42.
- Lamaitre RN, King IB, Mozaffarian DM, *et al.* n-3 Polyunsaturated fatty acids, fatal ischemic heart disease, and nonfatal myocardial infarction in older adults: the Cardiovascular Health Study. *Am. J. Clin. Nutr.* 2003;77:319-325.
- Mozaffarian D, Lemaitre RN, Kuller LH, *et al.* Cardiac benefits of fish consumption may depend on the type of fish meal consumed. *Circulation* 2003;107:1372-1377.
- Woodman RJ, Mori TA, Burke V, *et al.* Docosahexaenoic acid but not eicosapentaenoic acid increases LDL particle size in treated hypertensive type 2 diabetic patients. *Diabetes Care* 2003;26:253.
- American Heart Association, Heart Disease and Stroke Statistics, 2008 Update. Can be accessed at [http://www.americanheart.org/downloadable/heart/1200082005246HS\\_Stats%202008.final.pdf](http://www.americanheart.org/downloadable/heart/1200082005246HS_Stats%202008.final.pdf). The American Heart Association does not endorse Nutramax Laboratories, Inc. or its products.
- Appendix G2: Original Food Guide Pyramid Patterns and Description of USDA Analyses, Addendum A: EPA and DHA Content of Fish Species; Can be accessed at: [http://www.health.gov/dietaryguidelines/dga2005/report/html/table\\_g2\\_adda2.htm](http://www.health.gov/dietaryguidelines/dga2005/report/html/table_g2_adda2.htm)
- Stargrove MB, Treasure J, and McKee DL. Herb, Nutrient, and Drug Interactions. Mosby Elsevier, St. Louis, 2008; 784.
- Breslow JL. N-3 Fatty acids and cardiovascular disease. *Am. J. Clin. Nutr.* 2006; 83:S1477-1482.
- Williams CM, Burdge G. Long-chain n-3 PUFA: plant v. marine sources. *Proc. Nutr. Soc.* 2006;65:42-50.
- Streppel MT, Ocké MC, Boshuizen HC, *et al.* Long-term fish consumption and n-3 fatty acid intake in relation to (sudden) coronary heart disease death: the Zutphen study. *Eur. Heart J.* 2008; 16:2024-2030.
- Rodriguez BL, Sharp DS, Abbott RD, *et al.* Fish Intake May Limit the Increase in Risk of Coronary Heart Disease Morbidity and Mortality Among Heavy Smokers. The Honolulu Heart Program. *Circulation* 1996;94:952-956.
- Marchioli R, Barzi F, Bomba E, *et al.* Early protection against sudden death by n-3 polyunsaturated fatty acids after myocardial infarction: time-course analysis of the results of the Gruppo Italiano per lo Studio della Sopravvivenza nell'Infarto Miocardico (GISSI)-Prevenzione. *Circulation* 2002; 105: 1897-903.
- Geleijnse JM, Giltay EJ, Grobbee DE, *et al.* Blood pressure response to fish oil supplementation: meta-regression analysis of randomized trials. *J. Hypertens.* 2002; 20:1493-9.
- Harris WS, and Bulchandani D. Why do omega-3 fatty acids lower serum triglycerides? *Curr. Opin. Lipidol.* 2006; 4:387-393.
- Ninio DM, Hill AM, Howe PR, *et al.* Docosahexaenoic acid-rich fish oil improves heart rate variability and heart rate responses to exercise in overweight adults. *Br. J. Nutr.* 2008; 13:1-7.
- U.S. Department of Health and Human Services, Dietary Guidelines for Americans 2005, U.S. Department of Agriculture. Can be accessed at [www.healthierus.gov/dietaryguidelines](http://www.healthierus.gov/dietaryguidelines)
- American Heart Association, Fish and Omega-3 Fatty Acids AHA Recommendation, August 27, 2008; Can be accessed at <http://www.americanheart.org/presenter.jhtml?identifier=4632>. The American Heart Association does not endorse Nutramax Laboratories, Inc. or its products.