

DSM Nutritional Products

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® For DSM, quality is a way of life. This is the core of Quality for Life[™].

Quality for Life[™] is the mark of quality, reliability and traceability. It means that DSM customers are getting the best nutrition & health ingredients, knowing the source on which they depend. Quality for Life[™] means sustainability. It symbolizes our commitment to our environment, consumers, our business partners, our people and the regulatory framework that governs our operations. With the Quality for Life[™] seal, we guarantee peace of mind for you and for your customers.

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References

- 1) C. Lavie et al., 'Omega-3 polyunsaturated fatty acids and cardiovascular diseases', *J Am Coll Cardiol*. Vol. 54, no. 7, 2009, p. 585-94.
- 2) R. Deckelbaum et al., 'Conclusions and recommendations from the symposium, Beyond Cholesterol: Prevention and Treatment of Coronary Heart Disease with n-3 Fatty Acids', *Am J Clin Nutr*. Vol. 87, no. 6, 2008.
- 3) W. Mozaffarian and J. Wu, 'Omega-3 fatty acids and cardiovascular disease: effects on risk factors, molecular pathways, and clinical events', *J Am Coll Cardiol*. Vol. 58, no. 20, 2011, p. 2047-67.
- 4) T. Jacobson, 'Role of n-3 fatty acids in the treatment of hypertriglyceridemia and cardiovascular disease', *Am J Clin Nutr*. Vol. 87, no. 6, 2008.
- 5) U. Jung et al., 'n-3 fatty acids and cardiovascular disease: mechanisms underlying beneficial effects', *Am J Clin Nutr*. Vol. 87, no. 6, 2008.
- 6) S. Cunnane et al., 'Recommendations for intake of polyunsaturated fatty acids in healthy adults', *International Society for the Study of Fatty Acids and Lipids*, 2004, p. 1-22.
- 7) FAO/WHO, 'Interim summary of conclusions and dietary recommendations on total fat & fatty acids; summary of total fat and fatty acid requirements for adults, infants (0-24 months) and children (2-18 years). Prevention', 2008, p. 1-12.
- 8) USDA, Dietary Guidelines for Americans.
- 9) T. Blasbalg et al., 'Changes in consumption of omega-3 and omega-6 fatty acids in the United States during the 20th century', *Am J Clin Nutr*. Vol. 93, no. 5, 2011, p. 950-62.
- 10) W. Harris et al., 'Towards establishing dietary reference intakes for eicosapentaenoic and docosahexaenoic acids', *J Nutr*. Vol. 134, no. 4, 2009, p. 8045-8195.
- 11) P.M. Kris-Etherton and S. Innis, 'Position of the American Dietetic Association and Dietitians of Canada: Dietary Fatty Acids', *J Am Diet Assoc*. Vol. 107, no. 9, 2007, p.1599-1611.

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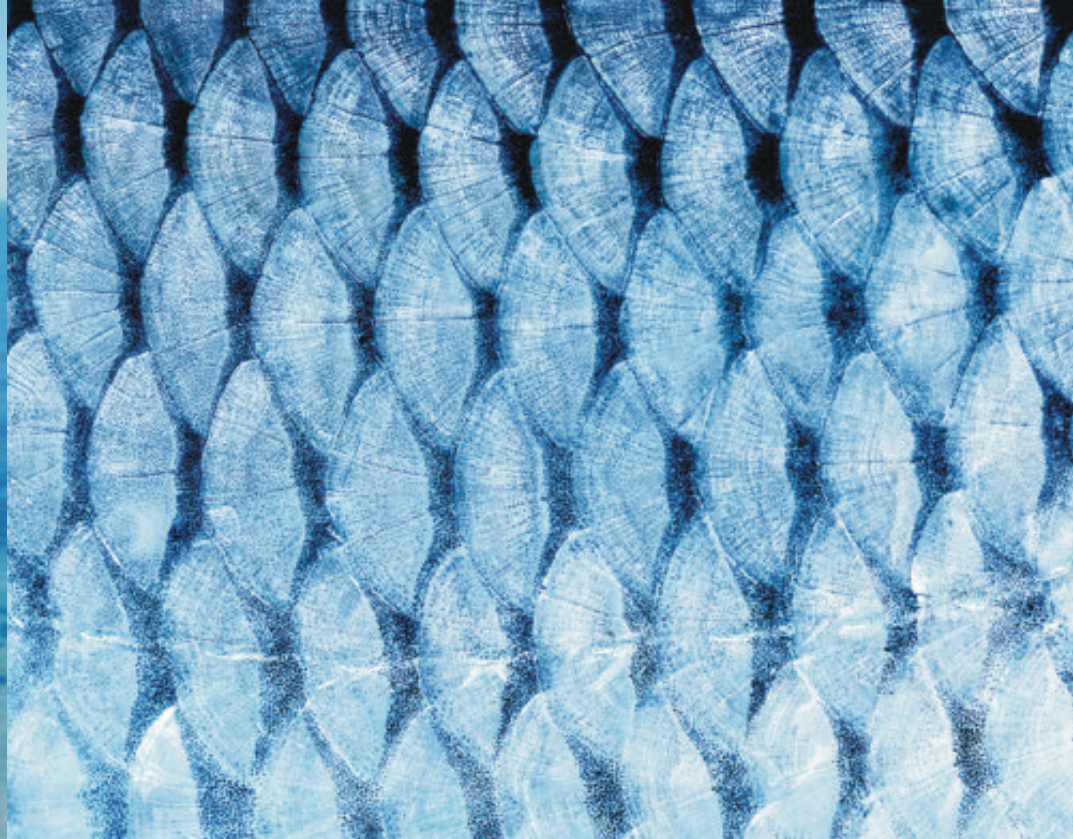
MEG-3[™] – trust the source

Sustainable, pure and trusted fish source of omega-3

May 2017

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What are omega-3 fatty acids?

Omega-3 fatty acids are essential nutrients found in fish and certain plant oils. They include ALA (alpha-linolenic acid), EPA (eicosapentaenoic acid) and DHA (docosahexaenoic acid). All three play an important role in normal growth and development, but EPA and DHA have been identified as particularly vital in supporting heart health.

MEG-3™ is a recognized and trusted brand of high quality, pure fish oil ingredients from sustainable sources. There have been more than 200 billion servings of MEG-3™ safely consumed worldwide.



Exceeding industry quality standards, and with unique and convenient delivery forms, MEG-3™ can be incorporated in a variety of food, beverage and dietary supplement and pharmaceutical applications.

Healthy hearts

More than 30,000 scientific publications show the numerous health benefits of EPA and DHA omega-3. EPA and DHA have been the focus of cardiovascular research for several decades, and the evidence to demonstrate their benefits for heart health is particularly strong.

Numerous observational and randomized clinical trials have shown that the intake reduces the risk of cardiovascular disease developing via:

- Reduction of blood triglycerides (TGs).
- Decrease in resting heart rate, blood pressure and inflammation.
- Improved vascular function.¹⁻²

There is substantial evidence to demonstrate the role of EPA and DHA in the reduction of coronary heart disease (CHD) death and sudden cardiac death (SCD), with the latter being attributed to the antiarrhythmic effects of omega-3s.³ There are also a multitude of clinical studies showing that EPA and DHA dose-dependently lower plasma triglyceride levels, by dampening the production of triglycerides and very low density lipoprotein (VLDL) in the liver.⁴⁻⁵

In order to receive the full health benefits offered by EPA and DHA, an adequate intake and status is needed:

- The International Society for the Study of Fatty Acids and Lipids (ISSFAL) recommends a combined minimum intake of 500mg of EPA and DHA a day.⁶

- The World Health Organization (WHO) recommends regular fish consumption of at least one to two servings of oily fish a week, to protect against CHD and ischemic stroke.⁷

There is a significant body of evidence to demonstrate that the benefits of EPA and DHA are supported by a recommended intake of at least 250mg/day, including the 2010 USDA Dietary Guidelines for Americans.⁸⁻⁹ Experts agree that people are not consuming enough EPA and DHA in their daily diets, with the majority of the population consuming less than 100mg of EPA and DHA per day.¹⁰

This low consumption presents a major challenge. An optimal level could be attained by eating a portion of fatty fish several times a week, however this may be unappealing, or even impossible, to many consumers. Alternatively, the nutritional gap can also be met with the inclusion of EPA and DHA supplements and fortified foods.¹¹ As such, there is an increasing demand for nutritionally dense foods and supplements containing omega-3s.



Sustainable, high quality, pure fish oil

Why MEG-3™?

MEG-3™ is a recognized ingredient brand amongst consumers, offering high quality, pure fish oil ingredients from sustainable sources. With more than 200 billion servings safely consumed worldwide, MEG-3™ offers consumers value-added nutrition, continued great taste and proven health benefits in a convenient format. MEG-3™ is subject to more than 200 quality checks during manufacturing, to ensure that it meets – or exceeds – global hygiene, quality and purity industry standards.

With more than 200 billion servings safely consumed worldwide, MEG-3™ offers consumers value-added nutrition.

Premium quality

In order to manufacture premium quality fish oil and omega-3 powder, excellent starting material is required alongside state-of-the-art technology and engineering systems. DSM puts 100% of its raw ingredients through rigorous testing to ensure it meets the highest quality standards. The fish oil then undergoes a series of processes, including molecular distillation and DSM's new state-of-the-art 3C Technology, to produce ultra-pure, high quality fish oil. During each step of the manufacturing process, great care is taken to limit the potential for oxidative damage. As a symbol of these quality parameters, MEG-3™ fish oils are the only oils in the world with USP verification. Select MEG-3™ products have also attained an IFOS five star quality rating.



DSM's patented Powder-loc™ technology has revolutionized the versatility of omega-3 ingredients. The innovative microencapsulation technology uses a double shell protection system to keep the EPA and DHA locked into the microcap, while keeping the smell and taste of fish locked out of the food, for minimum impact on consumer experience.



Sustainably sourced

Protection of the marine environment is an important issue to DSM, so great care is taken to ensure that all activity is responsible and sustainable, with equipment, practices and procedures in place to protect fish stocks.

Approved by Friends of the Sea (FOS), MEG-3™ is sourced from a variety of wild fish species. As a by-product of either the fishmeal or edible canning industries, no fish are caught for the exclusive production of oil. DSM also ensures that no species of fish from which MEG-3™ fish oils are produced are endangered according to the IUCN (International Union for the Conservation of Nature), nor are they listed on the CITES (Convention of International Trade in Endangered Species) appendices I-III.

Trust the potency

DSM markets a comprehensive portfolio of MEG-3™ branded omega-3 fish oil ingredients with unique and best-in-class delivery forms that enable incorporation into a variety of food and beverage, dietary supplement and pharmaceutical applications. These include food-grade oil and MEG-3™ emulsion liquid food ingredients, as well as MEG-3™ microencapsulated powder format using Powder-loc™ technology.

Additionally, DSM offers:

- MEG-3™ containing 30% EPA and DHA.
- MEG-3™ concentrates with up to 70% EPA and DHA, available in both ethylester and triglyceride forms.
- Super deodorized format for improved sensory qualities.
- Kosher and Halal certified.

This vast array of delivery forms ensures that MEG-3™ can provide solutions for a wide range of applications, from dairy and juices, to confectionery and bakery.

With a robust, vertically integrated supply chain and a global distribution network, DSM is able to guarantee stability of supply to its customers.



MEG-3™ Ultra and life'sDHA™

In addition, DSM uses its new proprietary 3C Technology to produce MEG-3™ Ultra for highly customizable EPA and DHA combinations and over 80% omega-3 from clean, wild, ocean fish.

3C Technology concentrates the essential fatty acids in ethylated fish or algal oils using a fractional distillation process. This results in a product up to three times more potent in comparison to standard EPA and DHA oil, meaning a smaller and more appealing capsule size. This ultimately saves encapsulation costs and reduces the expense of transporting and displaying the finished omega-3 supplements on retail shelves. It also maintains sustainability and sourcing flexibility through a robust supply chain that is less dependent on raw materials with specific EPA and DHA profiles.

Also available from DSM is *life'sDHA™* and *life'sOMEGA™* vegetarian, sustainable sources of DHA and EPA omega-3 from algae, that provide important brain, eye and heart health benefits through all stages of life.



The global leader in omega-3

From foods and beverages, to supplements and infant formulas, DSM has a solution to fit every omega-3 need, with its market-leading product portfolio.

Its trusted products are all purified in accordance to the safety and quality standards in line with DSM's Quality for Life™ promise.



Get to market faster with DSM

DSM's innovative solutions and services for omega-3s extend beyond its extensive range of ingredients. Through its global network of Nutrition Innovation Centers, it provides a variety of tailored, technical and consumer-related solutions that support its customers in getting to market faster and safer.

DSM has established a legacy of trust in the omega-3 category and is helping to shape the future growth of the market. It interacts with consumers throughout each stage of their journey to health, including investing in and generating the science, educating healthcare practitioners through outreach programs and resources,

co-developing and collaborating with customers to market health-focused products. MEG-3™ is a part of the range of DSM's Health Benefit Solutions that help you innovate and market health-focused consumer products successfully.

