

ORTHOMEGA® LIQUID FISH OIL MANGO



CLINICAL APPLICATIONS

- Supports Cardiovascular Health and Blood Sugar Metabolism
- Supports Cognitive Function and Development
- Supports Healthy Skin, Joints and Connective Tissues
- Increases Visual and Ocular Health
- Helps Maintain a Healthy Inflammatory Response and Strengthen Immune Function

CARDIOVASCULAR HEALTH

Orthomega® Liquid is a molecularly distilled, high-concentration fish oil sourced from the cold, fresh waters off the Chilean coast. These waters provide the cleanest, most sustainable source of fish in the world. Orthomega® Liquid includes 1.3 g of eicosapentaenoic acid (EPA), 850 mg of docosahexaenoic acid (DHA) and 175 mg of docosapentaenoic acid (DPA) per serving as triglycerides, the preferred form. The bioidentical, triglyceride form found in Orthomega® Liquid allows for enhanced absorption and better assimilation in the body. The Orthomega® Liquid formulation is a convenient method of achieving optimal omega-3 levels in the body. The natural mango-flavored liquid is the ideal alternative to encapsulated fish oil supplements.

Overview

Omega-3 fatty acids are essential cornerstones of human nutrition. They are deemed “essential” because we need them for proper health, but cannot produce them on our own. We must consume these fats through diet or supplementation. Omega-3 fatty acids are required for a number of body functions, from proper blood flow to brain development. These long-chain fatty acids are integral components of tissues and organ systems throughout the body, including the heart, skin, joints, eyes and immune system. In nature, omega-3 fatty acids occur as alpha linolenic acid (ALA), found mostly in plants, and as long-chain EPA, DHA and DPA, which primarily originate from cold-water fish. The body is able to slowly convert the shorter chain ALA to the more active long-chain, EPA, DHA and DPA. Conversion is limited in humans, making a higher dietary intake of EPA, DHA and DPA necessary. In addition, major

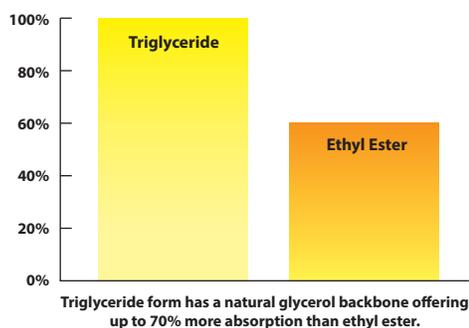
changes in modern diet over the last century have led to a decrease in the general consumption of omega-3 fatty acids. Since omega-3 fatty acids are known to benefit cardiovascular health, support healthy brain function and cognition, and maintain a healthy inflammatory response, achieving the proper balance of omega-3s has become an important health strategy that requires supplementation for most people.¹ The American Heart Association recommends that those concerned about blood lipids take up to 4 g of omega-3 fatty acids per day.²

Fish Oil Delivery – Triglycerides vs. Ethyl Esters[†]

While the amount of EPA, DHA and DPA provided in a fish oil product is important for efficacy, the type of fish oil delivered is another significant factor in defining fish oil effectiveness. The human body is accustomed to digesting and absorbing EPA, DHA and DPA in the triglyceride form. Even though triglyceride-based fish oils are the preferred form for superior fish oil absorption, the vast majority of fish oil products available on the market are in the ethyl ester form. While ethyl esters allow for higher concentrations of EPA, DHA and DPA, their unusual structure is resistant to the digestive enzymes (lipases) that enable fat breakdown. In a study comparing EPA and DHA digestion in both forms, five common digestive lipase enzymes were shown to more readily digest fish oil in the triglyceride as compared to the ethyl ester substrate.³ A recent study, conducted by fish oil research pioneer Dr. Jorn Dyerberg, demonstrated that omega-3s in the re-esterified triglyceride form are more efficiently digested and therefore 70% more absorbable than omega-3s in the ethyl ester form.⁴

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

Relative % Bioavailability of re-esterified Triglyceride Compared to Regular Ethyl Ester



Omega-3 Depletion[†]

An accumulating body of research shows that the typical modern diet does not provide a sufficient amount of omega-3s for optimal health. Additionally, insufficient conversion of ALA to the active EPA, DHA and DPA may reduce the amount available for use in organs and tissues. Symptoms of omega-3 deficiency are common and often overlooked. These may include dry, itchy or flaky skin, poor sleep quality, poor circulation, eye discomfort, and mood imbalance.⁵ Most of the studies over the past three decades have focused on EPA and DHA. In recent years, however, research has looked at DPA, the intermediate between EPA and DHA and the role it plays in our health. DPA collects in a variety of tissues including the liver, breast, brain, eyes, heart and red blood cells and is the intermediate between EPA and DHA. This, combined with the retroconversion of DHA back to EPA, suggests that DPA may be a reservoir for both EPA and DHA, thus increasing the storage of EPA, DHA and DPA and in turn, the beneficial healthy effects, of omega 3 fatty acids. The roles associated with DHA and EPA in supporting metabolic processes, neurological development, and maintaining inflammatory balance may, in part, be attributed to DPA. Each teaspoon of Orthomega[®] Liquid contains 175 mg of DPA.

Cardiovascular and Blood Sugar Health[†]

Omega-3 fatty acids have long been known to benefit cardiovascular health. The well-known GISSI-Prevezione trial found that just 1 g a day of omega-3 fatty acids had a significant impact on cardiovascular health after three to four months of consumption.⁶ EPA and DHA have been shown to modulate levels of fat in the blood,⁷ and a meta-analysis of 31 placebo-controlled trials found that for each gram of omega-3s consumed, there was improved support for healthy blood pressure levels.⁸ Population studies have also reported that EPA and DHA support better blood sugar balance in populations consuming large amounts of the n-3 long-chain PUFAs.⁹

Additional Benefits of Omega 3 Fatty Acids[†]

In addition to their well-known cardiovascular benefits, omega-3 fatty acids play a central role in brain development, mood enhancement, improved cognition, joint comfort and visual acuity.

Mood Enhancement[†]

A double-blind study, which randomly assigned participants with low mood to either placebo, 1 g/day or 2 g/day of EPA, found significant improvement with both doses of EPA compared to placebo in balancing mood.¹⁰

Increased Mental Focus[†]

In a recent British study, omega-3 blood levels were shown to be directly related to improved measures of cognition, performance and behavior among healthy children with below-average reading ability.¹¹

Joint Comfort[†]

A dose of 1,200 mg per day of omega-3 essential fatty acids were found to improve back and joint discomfort among 125 people, with 88% choosing to continue supplementation after the study's end.¹² Fish oil has also been shown to improve tender joints and morning stiffness after three months of consumption.

Visual Acuity[†]

A study evaluating the long-term effects of EPA and DHA on visual development in 136 school-age Inuit children exposed to high levels of n-3 PUFAs during gestation, found beneficial effects of DHA intake on visual acuity.¹³ Eating oily fish at least once per week compared with less than once per week was also found to enhance visual clarity and reduce commonly occurring visual deterioration in adults.¹⁴

Directions

1 teaspoon (5 ml) per day or as recommended by your health care professional.

Does Not Contain

Wheat, gluten, dairy, peanuts, tree nuts, egg, artificial colors, sweeteners or preservatives.

Cautions

If you are pregnant or nursing, consult your physician before taking this product.

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Supplement Facts ^{v2}

Serving Size 1 Teaspoon (5 mL)
Servings Per Container 30

1 teaspoon contains	Amount Per Serving	% Daily Value
Calories	40	
Total fat	4.5 g	6%*
Cholesterol	10 mg	3%
Total Omega-3 Fatty Acids	2.6 g	**
EPA (Eicosapentaenoic Acid)	1.3 g	**
DHA (Docosahexaenoic Acid)	850 mg	**
Omega-3 Fatty Acids (additional)	450 mg	**
DPA (Docosapentaenoic Acid)	175 mg	**

* Percent Daily Values are based on a 2,000 calorie diet.

** Daily Value not established

ID# 444005 5.07 fl oz (150 mL)

References

1. Connor WE. Importance of n-3 fatty acids in health and disease. *Am J Clin Nutr.* 2000 Jan;71(1 Suppl):171S-5S.
2. http://www.heart.org/HEARTORG/GettingHealthy/NutritionCenter/HealthyDietGoals/Fish-and-Omega-3-Fatty-Acids_UCM_303248_Article.jsp
3. Yang LY, Kuksis A, Myher JJ. Lipolysis of menhaden oil triacylglycerols and the corresponding fatty acid alkyl esters by pancreatic lipase in vitro: a reexamination. *J Lipid Res.* 1990 Jan;31(1):137-47.
4. Dyerberg J, Madsen P, Møller JM, Aardestrup I, Schmidt EB. Bioavailability of marine n-3 fatty acid formulations. *Prostaglandins Leukot Essent Fatty Acids.* 2010 Sep;83(3):137-41.
5. <http://umm.edu/health/medical/altmed/supplement/omega3-fatty-acids>
6. Dietary supplementation with n-3 polyunsaturated fatty acids and vitamin E after myocardial infarction: results of the GISSI-Prevenzione trial. Gruppo Italiano per lo Studio della Sopravvivenza nell'Infarto miocardico. [No authors listed]
7. Roche HM, Gibney MJ. Effect of long-chain n-3 polyunsaturated fatty acids on fasting and postprandial triacylglycerol metabolism. *Am J Clin Nutr.* 2000 Jan;71(1 Suppl):232S-7S.
8. Morris MC, Sacks F, Rosner B. Does fish oil lower blood pressure? A meta-analysis of controlled trials. *Circulation.* 1993 Aug;88(2):523-33.
9. Nettleton JA, Katz R. n-3 long-chain polyunsaturated fatty acids in type 2 diabetes: a review. *J Am Diet Assoc.* 2005 Mar;105(3):428-40. ScienceVoice Consulting, Denver, CO 80205, USA.
10. Frangou S, Lewis M, McCrone P. Efficacy of ethyl-eicosapentaenoic acid in bipolar depression: randomised double-blind placebo-controlled study. *Br J Psychiatry.* 2006 Jan;188:46-50.
11. Montgomery P, Burton JR, Sewell RP, Spreckelsen TF, Richardson AJ. Low Blood Long Chain Omega-3 Fatty Acids in UK Children Are Associated with Poor Cognitive Performance and Behavior: A Cross-Sectional Analysis from the DOLAB Study. *PLoS One.* 2013 Jun 24;8(6):e66697.
12. Maroon JC, Bost JW. Omega-3 fatty acids (fish oil) as an anti-inflammatory: an alternative to nonsteroidal anti-inflammatory drugs for discogenic pain. *Surg Neurol.* 2006 Apr;65(4):326-31.
13. Jacques C, Levy E, Muckle G, Jacobson SW, Bastien C, Dewailly E, Ayotte P, Jacobson JL, Saint-Amour D.J. Long-term effects of prenatal omega-3 fatty acid intake on visual function in school-age children. *Pediatr.* 2011 Jan;158(1):83-90, 90.e1.
14. Augood C, Chakravarthy U, Young I, Vioque J, de Jong PT, Bentham G, Rahu M, Seland J, Soubrane G, Tomazzoli L, Topouzis F, Vingerling JR, Fletcher AE. Oily fish consumption, dietary docosahexaenoic acid and eicosapentaenoic acid intakes, and associations with neovascular age-related macular degeneration. *Am J Clin Nutr.* 2008 Aug;88(2):398-406.

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