



A Dietary Supplement with a High Eicosapentaenoic Acid to Docosahexaenoic Acid Ratio Reduces Triglyceride Levels in Mildly Hypertriglyceridemic Subjects

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Author(s)

Alan S. Ryan, Stephen S. Porter, Frederick D. Sancilio

ABSTRACT

There is compelling evidence that omega-3 long-chain polyunsaturated fatty acids (n-3 PUFA), eicosapentaenoic acid (EPA, 20:5n-3) and docosahexaenoic acid (DHA, 22:6n-3) provide cardioprotective benefits. This open-label study evaluated whether an omega-3 fatty acid dietary supplement with a high EPA to DHA ratio (2.3:1) reduces triglyceride (TG) levels in mildly hypertriglyceridemic subjects. Twenty subjects, with a mean baseline TG level of 321.7 ± 108.7 mg/dL, were administered 4 g/day of Ocean Blue Professional Omega-3 2100™ (OB) supplements. Each gram of OB contains the ethyl esters of EPA (675 mg) and DHA (300 mg). Baseline and end of study blood values were collected to assess changes in fasting levels of TG, total cholesterol (TC), LDL-cholesterol (LDL-C), and HDL-cholesterol (HDL-C). Supplementation was provided for 30 to 228 days (mean = 106 ± 50 days). Mean age at enrollment was 50.3 ± 6.3 years. Compared with baseline values, mean TG levels decreased by 48% ($p = 0.001$). There were no changes in TC and HDL-C levels ($p = \text{NS}$); however, subjects had a significant increase in LDL-C levels (16.4%, $p = 0.05$). Results indicated that a high ratio of EPA to DHA ($>2:1$) had a statistically significant TG-lowering effect in mildly hypertriglyceridemic subjects. The lipid effects of OB are compared with those published in the literature for n-3 drugs indicated for hypertriglyceridemia (very high TG levels, > 500 mg/dL).

KEYWORDS

Omega-3 Fatty Acids; Dietary Supplements; Lipid Lowering Medications

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References

- [1] M. Miller, N. J. Stone, C. Ballantyne, V. Bittner, M. H. Criqui, H. N. Ginsberg, et al., "Triglycerides and Cardiovascular Disease: A Scientific Statement from the American Heart Association," *Circulation*, Vol. 123, No. 20, 2011, pp. 2292-2333. doi:10.1161/CIR.0b013e3182160726
- [2] P. M. Kris-Etherton, W. S. Harris and L. J. Appel, (for the AHA Nutrition Committee), "Omega-3 Fatty Acids and Cardiovascular Disease: New Recommendations from the American Heart Association," *Arteriosclerosis, Thrombosis, and Vascular Biology*, Vol. 23, No. 2, 2003, pp. 151-152. doi:10.1161/01.ATV.0000057393.97337.AE
- [3] W. S. Harris, "n-3 Fatty Acids and Serum Lipoproteins: Human Studies," *American Journal of Clinical Nutrition*, Vol. 65, Suppl. 5, 1997, pp. 1645S-1654S.
- [4] C. M. Albert, C. H. Hennekens, C. J. O' Donnell, U. A. Ajani, V. J. Care, W. C. Willett, et al., "Fish Consumption and the Risk of Sudden Cardiac Death," *Journal of the American Medical Association*, Vol. 279, No. 1, 1988, pp. 23-28. doi:10.1001/jama.279.1.23
- [5] M. L. Daviglius, J. Stamler, A. J. Orenca, A. R. Dyer, K. Liu, P. Greenland, et al., "Fish Consumption

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and the 30-Year Risk of Fatal Myocardial Infarction," *New England Journal of Medicine*, Vol. 336, No. 15, 1997, pp. 1046-1053. doi:10.1056/NEJM199704103361502

- [6] F. B. Hu, L. Bronner, W. C. Willett, et al., "Fish and Omega-3 Fatty Acid Intake and Risk of Coronary Heart Disease in Women," *Journal of the American Medical Association*, Vol. 287, No. 14, 2002, pp.1815-182. doi:10.1001/jama.287.14.1815
- [7] Gruppo Italiano per lo Studio Della Sopravvivenza nell' Infarto Miocardico, "Dietary Supplementation with n-3 Polyunsaturated Fatty Acids and Vitamin E after Myocardial Infarction: Results of the GISSI-Prevenzione Trial," *Lancet*, Vol. 354, No. 9177, 1999, pp. 447-455. doi:10.1016/S0140-6736(99)07072-5
- [8] M. Yokoyama, H. Origasa, M. Matsuzaki, et al., "Effects of Eicosapentaenoic Acid on Major Coronary Events in Hypercholesterolemic Patients (JELIS): A Randomized, Open-Label, Blinded Endpoint Analysis," *Lancet*, Vol. 369, No. 9567, 2007, pp. 1090-1098. doi:10.1016/S0140-6736(07)60527-3
- [9] D. Mozaffarian and J. H. Wu, "(n-3) Fatty Acids and Cardiovascular Health: Are Effects of EPA and DHA Shared or Complementary," *Journal of Nutrition*, Vol. 142, No. 3, 2012, pp. 614S-625S. doi:10.3945/jn.111.149633
- [10] S. C. Cottin, T. A. Sanders and W. L. Hall, "The Differential Effects of EPA and DHA on Cardiovascular Risk Factors," *Proceedings of the Nutrition Society*, Vol. 70, No. 2, 2011, pp. 215-231. doi:10.1017/S0029665111000061
- [11] J. D. Cohen, M. J. Cziraky, Q. Cai, A. Wallace, T. Wasser, J. R. Crouse, et al., "30-Year Trends in Serum Lipids among United States Adults: Results from the National Health and Nutrition Examination Surveys II, III, and 1999-2006," *American Journal of Cardiology*, Vol. 107, No. 7, 2010, pp. 969-975. doi:10.1016/j.amjcard.2010.05.030
- [12] R. B. Ervin, J. D. Wright, C. Y. Wang and J. Kennedy-Stephenson, "Dietary Intakes of Fats and Fatty Acids for the United States Population: 1990-2000," *Advance Data*, Vol. 8, No. 348, 2004, pp. 1-6.
- [13] Federal Drug Administration, Center for Drug Evaluation and Research, "Pharmacology/Toxicology Review and Evaluation: Omacor. Application Number 21-853, 21-654s016," 2004. http://www.accessdata.fda.gov/drugsatfda_docs/nda/2007/02853s000;%2002165s016_PharmR.pdf
- [14] H. E. Bays, C. M. Ballantyne, J. J. Kastelein, J. L. Isaacsohn, R. A. Braeckman and P. N. Soni, "Eicosapentaenoic Acid Ethyl Ester (AMR101) Therapy in Patients with Very High Triglyceride Levels (From the Multi-Center, placebo-controlled, Randomized, double-blind, 12-Week Study with an Open-Label Extension [MARINE] Trial)," *American Journal of Cardiology*, Vol. 108, No. 5, 2011, pp. 682-690. doi:10.1016/j.amjcard.2011.04.015
- [15] M. Suzukawa, M. Abbey, P. R. Howe and P. J. Nestel, "Effects of Fish Oil Fatty Acids on Low Density Lipoprotein Size, Oxidizability, and Uptake by Macrophages," *Journal of Lipid Research*, Vol. 36, No. 3, 1995, pp. 474-484.
- [16] C. D. Gardner, S. P. Fortmann and R. M. Kraus, "Association of Small Low-Density Lipoprotein Particles with the Incidence of Coronary Heart Disease in Men and Women," *Journal of the American*