

Abstract

Am J Clin Nutr. 2007 Aug;86(2):324-33

Docosahexaenoic acid supplementation improves fasting and postprandial lipid profiles in hypertriglyceridemic men.

Kelley DS, Siegel D, Vemuri M, Mackey BE.

Western Human Nutrition Research Center, Agricultural Research Service, US Department of Agriculture, and Department of Nutrition, University of California Davis, CA.

BACKGROUND: The effects of docosahexaenoic acid (DHA) on the mean size and concentrations of VLDL, LDL, and HDL subclasses have not been previously studied.

OBJECTIVE: We determined the effects of DHA supplementation on the concentrations of apoproteins; large, medium, and small VLDL, LDL, and HDL particles; and the mean diameters of these particles in fasting and postprandial plasma.

DESIGN: Hypertriglyceridemic men aged 39-66 y (n = 34) participated in a double-blind, randomized, placebo-controlled parallel study. They received no supplements for the first 8 d and received either 7.5 g DHA oil/d (3 g DHA/d) or olive oil (placebo) for the last 90 d. Lipoprotein particle diameters and concentrations were measured by nuclear magnetic resonance spectroscopy.

RESULTS: DHA supplementation for 45 d significantly ($P < 0.05$) decreased concentrations of fasting triacylglycerol (24%), large VLDL (92%), and intermediate-density lipoproteins (53%) and the mean diameter of VLDL particles (11.1 nm). It elevated concentrations of LDL cholesterol (12.6%), small VLDL particles (133%), and large LDL particles (120%) and the mean diameter of LDL particles (0.6 nm) in fasting plasma. Similar changes were observed for area under the curve for postprandial samples (0-6 h); however, the number of small dense LDL particles decreased significantly (21%), and the change in LDL cholesterol was not significant. Continued supplementation with DHA beyond 45 d caused no further changes; placebo treatment altered none of the responses tested.

CONCLUSION: DHA supplementation may improve cardiovascular health by lowering concentrations of triacylglycerols and small, dense LDL particles.

PMID: 17684201