Abstract


Docosahexaenoic acid supplementation decreases remnant-like particle-cholesterol and increases the (n-3) index in hypertriglyceridemic men.

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

Western Human Nutrition Research Center, Agricultural Research Service, USDA and Department of Nutrition, University of California, Davis, CA 95616, USA.

BACKGROUND: Plasma remnant-like particle-cholesterol (RLP-C) and the RBC (n-3) index are novel risk factors for cardiovascular disease. Effects of docosahexaenoic acid (DHA) supplementation on these risk factors in hypertriglyceridemic men have not been studied.

OBJECTIVE: We determined effects of DHA supplementation on concentrations of plasma RLP-C, the RBC (n-3) index, and associations between concentrations of plasma RLP-C with those of plasma lipids and fatty acids.

METHODS: Hypertriglyceridemic men aged 39-66 y, participated in a randomized, placebo-controlled, parallel study. They received no supplements for 8 d and then received either 7.5 g/d DHA oil (3 g DHA/d) or olive oil (placebo) for the last 90 d. Fasting blood samples were collected on study d -7, 0 (baseline), 45 (mid-intervention), 84, and 91 (end-intervention).

RESULTS: DHA supplementation for 45 d decreased (P < 0.05) fasting RLP-C (36%) and increased plasma eicosapentaenoic acid (EPA):arachidonic acid (AA) (100%) and the RBC (n-3) index (109%). Continued supplementation with DHA between d 45 and 91 further increased the RBC (n-3) index (162%) and plasma EPA:AA (137%) compared with baseline values. RLP-C concentration was positively associated (P < 0.01) with the plasma concentrations of triacylglycerols (Kendall's correlation coefficient or r = 0.44), triacylglycerol:HDL cholesterol (HDL-C) (r = 0.44), total cholesterol:HDL-C (r = 0.26), Apo B (r = 0.22), C III (r = 0.41), and E (r = 0.17), and 18:1(n-9) (r = 0.32); it was negatively associated (P < 0.05) with plasma concentrations of DHA (r = -0.32), EPA (r = -0.25), HDL-C (r = -0.21), LDL cholesterol:Apo B (r = -0.30), and HDL-C:Apo A (r = -0.25).

CONCLUSIONS: Supplementation with placebo oil did not alter any of the response variables tested. Decreased atherogenic RLP-C and increased cardio-protective (n-3) index may improve cardiovascular health.

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