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The comparative reductions of the plasma lipids and lipoproteins by dietary polyunsaturated fats: salmon oil versus vegetable oils.

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Abstract

The lower plasma lipid levels and lower incidence of atherosclerotic diseases in Greenland Eskimos suggested that the unusual fatty acids present in their diet of seal and fish may be anti-atherogenic. These fatty acids are eicosapentaenoic (C20:5) and docosahexaenoic (C22:6) acids and are of the omega-3 fatty acid family. We have compared a salmon oil diet containing high levels of these unique fatty acids to a control diet high in saturated fat and to a vegetable oil diet high in linoleic acid (C18:2). All diets contained 40% of the total calories as fat and 500 mg of cholesterol; they differed only in fatty acid composition. In 4 wk the salmon oil diet reduced plasma cholesterol levels from 188 to 162 mg/dl (p less than 0.001) and triglyceride levels from 77 to 48 mg/dl (p less than 0.005). LDL and VLDL cholesterol levels changed from 128 to 108 and 13 to 8 mg/dl (p less than 0.005), respectively. HDL cholesterol levels did not change. The vegetable oil diet caused similar decreases in cholesterol levels but did not lower triglyceride levels. The omega-3 fatty acids comprised up to 30% of the total fatty acids in each plasma lipid class after the salmon diet. Fish oils contain fatty acids which may be metabolically unique and potentially useful in the control of both hypercholesterolemia and hypertriglyceridemia.

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