Different Forms of EPA/DHA Exhibit Differential Potential for Blood Triglyceride-Lowering

Reference:

Moderate Doses of EPA and DHA from Re-esterified Triacylglycerols but not from Ethyl-Esters Lower Fasting Triacylglycerols in Statin-Treated Dyslipidemic Subjects: Results from a Six Month Randomized Controlled Trial


Inst. of Food Science and Human Nutrition, Leibniz University Hanover, Hanover, Germany

Summary:

It is very well established that supplementation with EPA/DHA omega-3 can markedly lower fasting serum triglyceride (triacylglycerol) levels in those who are or are not receiving medication with blood cholesterol-lowering statins (Holub, Can. Medical Assoc. J., 177: 604-605 (2007)). Furthermore, omega-3 ‘concentrates’ are now commercially available in both the ‘re-esterified triacylglycerol’ (TG) and the ‘ethyl ester’ (EE) forms. Recent studies have indicated a moderately better bioavailability of the TG when compared to the EE form at identical daily doses when blood measures for EPA/DHA levels are measured at baseline and after an extended period of daily supplementation. In the present clinical trial, the investigators directly compared the blood triglyceride (triacylglycerol) – lowering ability of EPA/DHA as the TG vs. EE form at equal doses/day in statin-treated patients.

For this purpose, 150 patients were randomly assigned to receive a ‘placebo’ (lacking EPA/DHA) or 1.68 gms/day of EPA/DHA (1.01 gms EPA plus 0.67 gms DHA) via supplementation using either the TG (re-esterified triacylglycerol) or the EE form. Fasting blood serum lipid levels were measured at baseline and after 3 and 6 months following supplementation. Based on capsule counting, compliance to supplementation was 97-98% across the groups. No significant changes were found in total-, LDL-, or HDL-cholesterol levels following supplementation. No change was found in the fasting triglyceride levels after 3 or 6 months relative to baseline in the placebo group. However, a statistically-significant decrease in fasting triglyceride levels relative to baseline levels was found at 3 months (by 16.7%) and at 6
months (by 18.7 %) in the TG group whereas the lesser reductions in the EE group (by 8.8 % at 3 months and 9.4 % at 6 months) did not reach statistical significance. The authors considered that the observed differences between the two omega-3 formulations was likely due to a better bioavailability of the TG over the EE form.

**Dr. Holub’s Comments:**

The present clinical trial suggests that recommended daily doses for omega-3 intakes as EPA plus DHA via supplementation may need to pay consideration to the particular form of the omega-3 fatty acid(s) being ingested. Other considerations would be the cost per unit (amount) of EPA/DHA being consumed since, despite the apparent moderately lower bioavailability and efficacy of the oral EE form as indicated in this study, cost comparisons of highly enriched omega-3 concentrates of equal amounts often show a somewhat greater cost for the TG form. This study also supports the value of blood measures for omega-3 status to ensure that target ranges are being attained. Finally, future clinical trials which mimic the present study (in evaluating efficacy and bioavailability) will be of utmost interest so as to include other forms of omega-3 concentrates that are becoming available commercially (such as the free fatty acid and phospholipid forms of EPA and DHA).