

Dietary ALA sufficient to raise omega-3 levels, says study

A daily 2.4 gram dose of ALA-rich flax oil is enough to raise overall levels of omega-3 fatty acids, suggests a new study that supports inclusion of ALA-rich sources in the diet.

A new clinical trial by researchers from the University of North Dakota and the University of Manitoba found that flax oil, rich in alpha-linolenic acid (ALA), could increase red blood cell levels of eicosapentaenoic acid (EPA) and docosapentaenoic acid (DPA), but not docosahexaenoic acid (DHA).

The study, published in the *American Journal of Clinical Nutrition*, compared the intakes of different flax oil doses with different doses of fish oil on the fatty acid profile of red blood cells in human volunteers.

"We are aware of no other study examining the direct changes of flax oil and fish-oil supplements given at modest doses on red blood cell phospholipids in a dose-dependent manner and in an occupational group at risk of heart disease," wrote lead author Gwendolyn Barcelo-Coblijn in the journal.

"Our results clearly indicate that an increase in the consumption of flax oil, which was highly enriched in ALA, led to an increase in omega-3 fatty acid content in the groups receiving 2.4 and 3.6 grams flax oil per day and that the consumption of fish oil in the groups receiving 0.6 and 1.2 grams of fish oil per day led to an increase in omega-3 fatty acid content compared with the placebo group."

ALA has received significantly less study from scientists and less attention from the consumers than the longer-chain EPA and DHA. **The health benefits associated with ALA consumption include cardiovascular effects, neuro-protection, a counter to the inflammation response, and benefits against autoimmune disease.**

Emerging from the shadow of EPA and DHA

A recent review by Aliza Stark and Ram Reifen from the Hebrew University of Jerusalem and Michael Crawford from London Metropolitan University, stated that the **ALA is the "only member of the omega 3 family considered to be essential" but its importance "has been overlooked" (Nutrition Reviews, Vol. 66, pp. 326-332).**

Much attention has been paid to the conversion of ALA to the longer chain EPA, with many stating that this conversion is very small. According to Stark, Crawford, and Reifen, between 8 and 20 per cent of ALA is converted to EPA in humans, and between 0.5 and 9 per cent of ALA is converted to DHA.

"Although there are some concerns regarding the efficiency of the ALA conversion... human clinical studies show that an increase in dietary ALA leads to significant increases in ALA, EPA, and DPA in the blood, and yet many of these studies are carried out using very large daily intakes, often more than five grams of ALA," wrote Barcelo-Coblijn.

In order to address the question as to whether lower doses could also produce effects, Barcelo-Coblijn and co-workers recruited 62 fire-fighters and randomly assigned them to one of six groups: a placebo (sunflower oil) group, three groups receiving 1.2, 2.4 or 3.6 grams of flax oil per day, and two groups receiving 0.6 or 1.2 grams of fish oil per day.

The flax oil and sunflower oil capsules were obtained from Bioriginal Food & Science Corporation, while the fish-oil capsules were obtained from Ocean Nutrition Canada.

Results

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As the researchers expected, the fish oil supplements produced increases in EPA and DHA. Meanwhile, the higher dose flax oil supplements were associated with increases in ALA, EPA and, in the 2.4 gram group, DPA. **No increase in DHA levels in red blood cells was observed in the flax oil groups, indicating the very low conversion of ALA to DHA, said the researchers.**

A 2.4 gram daily dose of flax oil increased EPA 1.4-fold, while the higher dose increased EPA 1.3-fold after six weeks. For the fire-fighters receiving the fish oil supplements, EPA levels increased 1.6 fold for the 0.6 grams per day group after two weeks and remained high for the rest of the study. Supplementation with 1.2 grams per day of fish oil also increased EPA levels 1.6-fold after two weeks, but levels had increased 2.1-fold after 12 weeks.

The researchers did not note any differences between the groups with regards to levels of inflammatory markers or cholesterol profiles at the end of the study.

"Our results clearly indicate that 2.4 g flax oil per day is sufficient to significantly increase red blood cell phospholipid omega-3 fatty acids, which suggests that a similar effect may be occurring in other tissues," wrote the researchers.

"The similarity between the greater concentrations of EPA and DPA in the group receiving 2.4 g flax oil/d than in either fish-oil group suggests that dietary ingestion of plant-derived omega-3 fatty acids is sufficient to meet the dietary needs of humans."

This article helps explain why **NanOmega³** may be your best choice for omega-3 supplementation. Meadow Pure™ organic flaxseed has a typical fat ratio of 45%, most of which is ALA. The 5 grams of organic flaxseed in every 12 gram scoop of **NanOmega³** supplies 2.25 gm flax oil, very close to the optimal 2.4 gm dose in the above study. *Also you now understand the importance of our adding 100 mg vegan sourced DHA from marine algae (Martek's lifesDHA™) per serving as well, as ALA did not increase red blood cell DHA at all!*

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Source: *American Journal of Clinical Nutrition*, September 2008, Volume 88, Issue 3, Pages 801-809, "Flaxseed oil and fish-oil capsule consumption alters human red blood cell n-3 fatty acid composition: a multiple-dosing trial comparing 2 sources of n-3 fatty acid" Authors: G. Barcelo-Coblijn, E.J Murphy, R. Othman, M.H. Moghadasian, T. Kashour, J.K. Friel