

Does conjugated linoleic acid increase conversion of α -linolenic acid to docosahexaenoic acid in humans?

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Background - The synthesis of DHA from ALA is limited in healthy individuals, especially in young men. The rate limiting step in the formation of DHA from ALA is the last step which involves peroxisomal oxidation of 24:6n-3 to DHA. CLA is the common name of a group of fatty acids found in dairy products and meat from ruminants. CLA has been shown to activate peroxisome proliferators-activated receptor alpha (PPAR α) in mice and this has been associated with hepatic peroxisomal proliferation.

Objective –To determine whether supplementing healthy subjects' diet with ALA from flaxseed oil together with CLA capsules for 8 weeks would lead to an increase in DHA concentration in plasma PL, TAG and CE fractions compared with a group supplemented with ALA from flaxseed oil and a placebo capsule (soybean oil).

Design – Nineteen healthy male and female volunteers were divided to receive either 20mL of flaxseed oil and CLA capsules (3.2 g CLA) per day or 20mL of flaxseed oil and soybean oil capsules (placebo) per day for 8 weeks.

Outcomes - The results of the study showed no significant increase in plasma DHA concentration (or %) in the ALA plus CLA group compared with the ALA plus placebo group in males and females. There was a significant decrease in monounsaturated fatty acids and n-9 PUFA concentrations and proportions in the ALA plus CLA group at 4 and 8 weeks of the study compared with baseline.

Conclusions- The results showed that CLA did not increase DHA levels, and therefore in the dose given in this study it may not stimulate peroxisomes in humans. The changes in fatty acid metabolism observed in this study might be a result of CLA affects on delta-6 and delta-9 desaturase activities.