primary studies - published RCT

The absorption and effect of dietary supplementation with omega-3 fatty acids on serum leukotriene B4 in patients with cystic fibrosis.

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Study design (if review, criteria of inclusion for studies)

prospective, randomized, double-blind, crossover study

Participants

14 patients with CF (age: 6-16 years, mean 10.5 years; baseline Shwachman-Brasfield scores: 41-88, mean 76.7)

Interventions

6 weeks of n-3 ethyl ester concentrate from menhaden oil (100-131 mg/kg/day, mean 112.8) or n-6 fatty acids from safflower oil (102-132 mg/kg/day, mean 113.3), followed by a washout period of 6 weeks, and then 6 weeks of the other supplement.

Outcome measures

eicosapentaenoic acid (20:5n-3) in platelet phospholipids, docosahexaenoic acid (22:6n-3). Clinical effects were evaluated at weeks 0, 6, 12, and 18, and analyzed for differences among the n-3, n-6, and washout periods. adverse effects were reported. Shwachman-Brasfield scores, sweat test, weight change, FEV1, FEF25-75%, and FVC percentiles. Tumor necrosis factor, serum leukotriene B4 (LTB4) levels

Main results

Analysis by gas chromatography showed that n-3 supplementation resulted in increased eicosapentaenoic acid (20:5n-3) in platelet phospholipids, from 0.14 to 2.16%, $P < 0.05$ and in increased docosahexaenoic acid (22:6n-3), from 1.33 to 3.72%, $P < 0.05$. Clinical effects were evaluated at weeks 0, 6, 12, and 18, and analyzed for differences among the n-3, n-6, and washout periods. No adverse effects were reported or observed. No statistically significant differences were found (ANOVA, $P > 0.05$) in Shwachman-Brasfield scores, sweat test, weight change, or forced expiratory volume and flow (FEV1, FEF25-75%, and FVC) percentiles. Tumor necrosis factor was not measurable in any serum sample. Serum leukotriene B4 (LTB4) levels were significantly reduced by n-3 fatty acids, mean reduction (-177 pg/mL) compared to n-6 fatty acids (+63 pg/mL) P

Authors' conclusions

These results show that both n-3 fatty acids are absorbed and incorporated into platelet phospholipids in patients with CF and reduced serum LTB4. No significant clinical differences or adverse effects were found.

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See also

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Keywords

Adolescent; Child; Docosahexaenoic Acid -DHA-; omega-6; Food; non pharmacological intervention - diet; omega-3; pharmacological_intervention; Supplementation; essential fatty acids;