

Abstract

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Effects of supplemental fish oil on resting metabolic rate, body composition, and salivary cortisol in healthy adults.

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BACKGROUND: To determine the effects of supplemental fish oil (FO) on resting metabolic rate (RMR), body composition, and cortisol production in healthy adults.

METHODS: A total of 44 men and women (34 ± 13 y, mean+SD) participated in the study. All testing was performed first thing in the morning following an overnight fast. Baseline measurements of RMR were measured using indirect calorimetry using a facemask, and body composition was measured using air displacement plethysmography. Saliva was collected via passive drool and analyzed for cortisol concentration using ELISA. Following baseline testing, subjects were randomly assigned in a double blind manner to one of two groups: 4 g/d of Safflower Oil (SO); or 4 g/d of FO supplying 1,600 mg/d eicosapentaenoic acid (EPA) and 800 mg/d docosahexaenoic acid (DHA). All tests were repeated following 6 wk of treatment. Pre to post differences were analyzed using a treatment X time repeated measures ANOVA, and correlations were analyzed using Pearson's r.

RESULTS: Compared to the SO group, there was a significant increase in fat free mass following treatment with FO (FO = $+0.5 \pm 0.5$ kg, SO = -0.1 ± 1.2 kg, $p = 0.03$), a significant reduction in fat mass (FO = -0.5 ± 1.3 kg, SO = $+0.2 \pm 1.2$ kg, $p = 0.04$), and a tendency for a decrease in body fat percentage (FO = $-0.4 \pm 1.3\%$ body fat, SO = $+0.3 \pm 1.5\%$ body fat, $p = 0.08$). No significant differences were observed for body mass (FO = 0.0 ± 0.9 kg, SO = $+0.2 \pm 0.8$ kg), RMR (FO = $+17 \pm 260$ kcal, SO = -62 ± 184 kcal) or respiratory exchange ratio (FO = -0.02 ± 0.09 , SO = $+0.02 \pm 0.05$). There was a tendency for salivary cortisol to decrease in the FO group (FO = -0.064 ± 0.142 $\mu\text{g/dL}$, SO = $+0.016 \pm 0.272$ $\mu\text{g/dL}$, $p = 0.11$). There was a significant correlation in the FO group between change in cortisol and change in fat free mass ($r = -0.504$, $p = 0.02$) and fat mass ($r = 0.661$, $p = 0.001$).

CONCLUSION: 6 wk of supplementation with FO significantly increased lean mass and decreased fat mass. These changes were significantly correlated with a reduction in salivary cortisol following FO treatment.

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