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The Effects of Flaxseed Oil Omega-3 Fatty Acids Supplementation on Metabolic Status of Patients with Polycystic Ovary Syndrome: A Randomized, Double-Blind, Placebo-Controlled Trial.

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Abstract

OBJECTIVE: This study was conducted to evaluate the effects of flaxseed oil omega-3 fatty acids supplementation on metabolic status of patients with polycystic ovary syndrome (PCOS).

METHODS: This randomized double-blind, placebo-controlled trial was conducted on 60 women with PCOS according to the Rotterdam criteria aged 18-40 years old. Participants were randomly assigned into two groups to receive either 1,000 mg flaxseed oil omega-3 fatty acids (n=30) or placebo (n=30) twice a day for 12 weeks. Metabolic, endocrine, inflammatory factors were quantified at baseline and after the 12-week intervention.

RESULTS: After the 12-week intervention, compared to the placebo, flaxseed oil omega-3 supplementation significantly decreased insulin values (-2.6±7.7 vs.+1.3±3.9 μIU/mL, P=0.01), homeostasis model of assessment-estimated insulin resistance (-0.7±1.7 vs.+0.3±0.9, P=0.01), mF-G scores (-1.2±1.7 vs. -0.1±0.4, P=0.001), and increased quantitative insulin sensitivity check index (+0.01±0.02 vs. -0.01±0.02, P=0.01). In addition, supplementation with flaxseed oil omega-3 resulted in significant decreases in serum triglycerides (-5.1±20.9 vs.+9.7±26.1 mg/dL, P=0.01), VLDL-cholesterol (-1.0±4.2 vs.+1.9±5.2 mg/dL, P=0.01) and high-sensitivity C-reactive protein (hs-CRP) (-1.6±3.1 vs.+0.2±1.5 mg/L, P=0.004) compared to the placebo. We did not see any significant effect of flaxseed oil omega-3 supplementation on hormonal and other lipid profiles, and plasma nitric oxide levels.

CONCLUSIONS: Overall, flaxseed oil omega-3 supplementation for 12 weeks in women with PCOS had beneficial effects on insulin metabolism, mF-G scores, serum triglycerides, VLDL-cholesterol and hs-CRP levels, but did not affect hormonal and other lipid profiles, and plasma nitric oxide levels.

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