

8 weeks of 2 S-Hesperidin supplementation improves muscle mass and reduces fat in amateur competitive cyclists: randomized controlled trial

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Abstract

2S-Hesperidin is the main flavonoid of orange (*Citrus sinensis*). Previous researches have pointed its effects in muscle development and fat accumulation reduction, although most of these results have not been assessed in humans. The objective of this study is to evaluate the effect of chronic (8-weeks) intake of 2S-hesperidin on amateur cyclists' body composition. A double-blind, parallel and randomized trial, was carried out with 40 amateur cyclists that were divided in two groups, one taking 2S-hesperidin (500 mg d⁻¹, n = 20) and another taking placebo (500 mg d⁻¹ microcellulose, n = 20) for 8 weeks. Dual-energy X-ray absorptiometry (DXA) and anthropometric measurements were used to assess the effect of both treatments on body composition. In addition, the resting metabolic rate was measured. In comparison to placebo, DXA analysis showed a decrease in percentage body fat (%BF) (-10.4%; p = 0.035) and lower limb fat mass (-10.5%; p = 0.029) in favour of 2S-hesperidin. After evaluation of anthropometric data, a decrease in %BF (-3.7%; p = 0.006), total body fat (-3.0%; p = 0.047), Σ of 8 skinfolds (-6.1%; p = 0.008) was observed in 2S-hesperidin group, but not in placebo. Additionally, there was an increase in muscle mass percentage (1.0%; p = <0.001) and total muscle mass (1.7%; p = 0.011) after ingestion of 2S-hesperidin, with no changes in placebo. Chronic intake of 2S-hesperidin decreased fat mass in amateur cyclists, evaluated through different body composition measurement methodologies (DXA and anthropometry). In addition, 2S-hesperidin supplementation showed a promoting effect on muscle development.

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