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Four-Week Supplementation of Soy Milk Post Daily Training Improves Blood Lipid Status and Increases Explosive Power in Female Soccer Players

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INTRODUCTION:
It has been widely accepted that protein supplement can promote the synthesis of skeletal muscle protein and relieve muscle injury induced by exercise. The most commonly used protein is whey protein derived from milk, but lactose in it will make people who do not produce enough lactase prone to diarrhea, nausea, stomach cramps and other symptoms of lactose intolerance, which will also interfere with the effect of protein supplement on fatigue recovery. Meanwhile, more and more vegan athletes or sports enthusiasts are seeking alternatives to animal protein supplements. Therefore, the purpose of this study is to evaluate the effects of long-term supplementation of soy protein after daily exercise training on the related indicators of fatigue, metabolism, inflammation, muscle damage and athletic ability, providing scientific basis for the effectiveness of soy milk as a substitute for whey protein for lactose intolerant people and vegan sports people.
METHODS:
The study was designed as a randomized controlled experiment. Twenty professional female soccer players from Shanghai were recruited. The experimental group was supplemented with 500ml soy milk, and the control group was supplemented with 500ml water added isocaloric oligosaccharides after training from Monday to Saturday for 4 weeks. Blood samples were taken before and every Saturday morning through the study to evaluate their nutritional status, fatigue levels and inflammatory response changes, and their athletic ability (Counter Movement Jump CMJ, Squat Jump SJ, 20/30m sprint) were also assessed at the same time points.
RESULTS:
During the four-week supplement period, compared with the control group, the body fat percentage of the soy milk group showed a downward trend, the muscle mass showed an upward trend, and the change of serum glycerol was significantly lower (30.69±2.99 vs. 39.43±2.83mmol/ml, p=0.042). The decrease in serum triglyceride (-0.23±0.05 vs. -0.04±0.05mmol/L, p=0.012) and the increase in HDL (0.14±0.02 vs. 0.02±0.04mmol/L, p=0.024) were both significantly higher after one week in the soy milk group than the control group. CMJ and SJ height and 20/30m sprint time showed an upward trend, and the increase in SJ height was significantly higher in the soy milk group than the control group after four weeks of supplementation (1.97±0.86cm vs. 0.19±0.50cm, p=0.007).
CONCLUSION:
The intake of plant-based soy milk immediately after daily exercise training can improve the blood lipid status and increase the explosive power of lower limbs. Long-term supplementation of soy milk may also increase muscle mass and reduce body fat. Soy milk can be used as an effective substitute for whey protein for lactose intolerant people and vegan sports people.

Topic: Nutrition

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