Effects of Chlorella Extract Solution Supplementation on Recovery After Dehydration-induced Fatigue in Male College Athletes

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Abstract

Introduction: Chlorella is a unicellular green alga contained a variety of nutrients. The aim of the present study was to investigate the effects of Chlorella supplementation on physical fatigue after dehydration.

Methods: In this cross-over human study, 10 male college students (age: 20±2 year-old) subjects were divided into Placebo and Chlorella groups. In order to induce dehydration, all subjects were asked to perform exercise on treadmill in high temperature (40°C) and humidity (80%) environment until they loss 3% of body weight. After dehydration, subjects in Chlorella groups were supplemented with 175 ml Chlorella extract solution and sports drink (1.5 time of weight loss) during 2 hours recovery time. Placebo groups were supplemented with regular water and sports drink. Maximal oxygen consumption of all subjects were determined using graded exercise test (GXT) before, 4, 24 and 48 hours after dehydration. Glucose, superoxide dismutase (SOD), thiobarbituric acid reactive substances (TBARS), interleukin 6 (IL-6), interleukin 10 (IL-10), cortisol and testosterone levels of blood were measured before, 0, 1, 2, 3, 4, 24 and 48 hours after dehydration, in order to see the biochemical variables on recovery status.

Results: Exercise duration and VO_{2max} significantly decreased after dehydration in both groups. Exercise duration and maximal oxygen uptake in Chlorella group are significantly higher 4 and 24 hours after dehydration, compared to those in Placebo group. However, there was no significant difference on biochemical blood markers between two groups throughout the entire period of the study.

Conclusions: Our findings demonstrated that supplementation of Chlorella extract solution could improve the deterioration of post-endurance induced dehydration.

Keywords: Green Algae, Fatigue, Endurance performance