Effect of glutamine supplementation on neutrophil function in male judoists.

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Source

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Abstract

Glutamine is an important amino acid for immune function. Though high intensity and prolonged exercise decreases plasma glutamine concentration and causes immune suppression, the relationship between neutrophil functions and glutamine has not yet been found. The purpose of this study was to investigate the impacts of glutamine supplementation on neutrophil function. Twenty-six male university judoists were recruited. Subjects were classified into glutamine and control groups. The glutamine group ingested 3000 mg of glutamine per day and the control group ingested placebo for 2 weeks. Examinations were performed at the start of preunified loading exercise (pre-ULE), then 1 and 2 weeks after ULE (post-ULE). Reactive oxygen species (ROS) production, phagocytic activity, serum opsonic activity and serum myogenic enzymes were measured. Differences between the levels obtained in pre-ULE and post-ULE for the two groups were compared. In the glutamine group, ROS production activity increased 1 week after ULE, whereas it was not observed in the control group (P < 0.001). Though myogenic enzymes increased significantly after ULE (P < 0.001), the glutamine group remained unchanged by supplementation during ULE. Glutamine supplementation has prevented excessive muscle damage and suppression of neutrophil function, especially in ROS production activity, even during an intensive training period.