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Acute Effect of Glutamine Supplementation on Serum Levels of LDH after Eccentric Resistance Exercise in Untrained Young Men

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Abstract

L-Glutamine is the most abundant amino acid in human muscle protein synthesis is and can Lactate Dehydrogenase (LDH) is one of biochemical degradation of muscle cells in blood serum reduce. Increased serum Lactate Dehydrogenase and exercise extrovert is more pronounced among non-athletes. The aim of this study is acute influence of L-Glutamine supplementation on serum levels of LDH after eccentric resistance exercise in young men. Methods: 16 randomly selected young man (age: 22.35±2.27yr; body mass: 69.91± 9.78kg; height: 177.08±4.32cm) disabled and the two groups (n=8) control group (n=8) were divided that all subjects were obtained twice in the 8th with maximum dominant leg begins to warm up, then in 3 sets of 15 teeth with 70%1 RM performed knee flexion. Test the positive side move to the zero angle of the knee joint did and the motion negative (eccentric contraction of the quadriceps) was carried out by subjects. Also, rest for 3 minutes between each session was considered. The active group received L-Glutamine acute. Blood samples were taken from the subjects after 24 hours and data using spss software and analyzed by parried sample T test (P≤0.05). Results showed that acute consumption of L-Glutamine in the active group (P = 0.001) were significant and in the control group (P = 0.17), no significant effect was observed. This study showed that acute consumption of L-Glutamine can be Lactate Dehydrogenase is reduced and muscle damage.

Keywords: Lactate Dehydrogenase, L-Glutamine ,eccentric exercise

Introduction

Many athletes use a variety of dietary supplements to improve their performance and minimizing risk of injures to provide them with an advantage over their opponent (2). DOMS and impaired muscle function are the common consequences of excessive EE (1). Glutamine is the most abundant amino acid within the human body (4). Multiple roles of dietary protein and key amino acids such as glutamine create a variety of potential applications for hard-training athletes (4). Increase intramuscular glutamine levels have been directly linked to influencing muscle cell volume (9), which enhances protein synthesis, and increases muscle size. By increasing muscle mass, the contractile force of a muscle can be increased (2).During exercise, increases and decreases in plasma glutamine levels have been demonstrated and these variations are reflected by the type, duration, and intensity of exercise (6). Exercise induced muscle damage to muscle fibers resulting in an inflammatory response (7) and myofibrillar damage along the Z-band (8).

In general, DOMS continues to increase after exercise and peaks between 24 and 48 h after exercise). The reasons behind DOMS have been a steady interest for many sports scientists for a long time. Although several factors including lactic acid, connective tissue damage surrounding muscles, muscle temperature, muscle spasm, inflammatory responses, free radicals, and nitric oxides have been suggested for causing DOMS, there is no clear explanation Previous literatures have speculated that the cause of DOMS is due to structural muscle damages and perturbation of calcium homeostasis or acute inflammatory responses to exercise .The EMG spectrum from eccentric, concentric muscle contractions and increased serum levels of muscle proteins such as creatine kinase (CK) in humans were studied as a factor of mechanical damage of muscle fiber and functional change of metabolic tissue (9,10). Prophylactic and therapeutic nutritional interventions involving protein, protein hydrolysate, mixed amino acids, selective amino acids, and branched-chain amino acids have been demonstrated to be effective in reducing some or all of the symptoms of muscle damage following isolated eccentric muscle actions (11,13), resistance exercise (14),downhill running (15), and endurance exercise (17).

Method

16 randomly selected young man (age: 22.35±2.27yr; body mass: 69.91± 9.78kg; height: 177.08±4.32cm) disabled and the two groups (n=8) control group (n=8) were divided that all subjects were obtained twice in the 8th with maximum dominant leg begins to warm up, then in 3 sets of 15 teeth with 70%1 RM performed knee flexion. Test the positive side move to the zero angle of the knee joint did and the motion negative (eccentric contraction of the quadriceps) was carried

out by subjects. Also, rest for 3 minutes between each session was considered. The active group received L-Glutamine acute. Blood samples were taken from the subjects after 24 hours and data using spss software and analyzed by parried sample T test (P≤0.05).

Results and Discussion

LDH one of the tiny blood factors that are indicative of muscle damage in the hours after intense exercise significant increase in the blood and muscle. Extreme eccentric muscle exercises cause more damage, and enzymes in the plasma to enter into the muscle cells and thus can be identified muscle damage after exercise. Research a lot about that eccentric exercise causes muscle damage and destruction there. The sports supplements can reduce muscle damage and its value in plasma research also shows that the amino acid intake can prevent further muscle damage. Glutamine is the most abundant amino acid in human muscle that can damage and destroy muscle cells after eccentric exercise prevent the aim of this study is that acute consumption of glutamine what the outcome will be. Results showed that athletes who use non-acute 0.1 grams of glutamine per kg of body weight had decreased blood lactate dehydrogenase which indicates muscle damage is low (p = 0.001). This increase was observed in the group that had consumed glutamine (p = 0.17). The results showed that acute consumption of glutamine supplementation of 0.1 grams per kilogram of body weight non-athletes reduce muscle damage and muscle damage can be prevented.

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