The effect of glutamine supplementation on serum levels of leptin, IL-6 and OX-LDL after exhaustive exercise in young males

Abstract

Background and Objective: Glutamine is one of the nutritional supplement that has anti-inflammatory and antioxidant effects and is also the most abundant amino acid found in plasma and skeletal muscles. Consuming of glutamine supplement may be beneficial to athletes due to its anti-inflammatory and antioxidant effects. Therefore, the present study aimed to investigate the effect of glutamine supplementation on serum levels of Leptin, OX-LDL and IL-6 after exhaustive exercise in young male.

Methods: In this experimental study, 30 healthy male people were randomly selected into two groups, 15 in intervention group and 15 in control group. The intervention group received 0.3 g of glutamine per kg of body weight per day, with 25 g of sugar in 250 cc water and control group received 25 g of sugar per 250 cc water for 14 days. At the beginning and also at the end of the second week of the study the fasting blood sample was taken. On the 15th day, all participants performed an exhaustive exercise, and then once again immediately blood samples were taken for measuring the serum levels of total antioxidant capacity (TAC), leptin, IL-6 and OX-LDL after an exhaustive exercise. Paired and unpaired t-test were used for analyzing data.

Results: The mean of Leptin serum levels after consuming of glutamine in two weeks in intervention group was statistically less than control group ($P<0.05$). But reduction of the mean of IL-6, OX-LDL and enhancement of the serum levels of total antioxidant capacity was not significant in intervention group compared with control group. However, after exhaustive exercise, reduction of the mean of serum levels of leptin, IL-6 and OX-LDL, and enhancement of total antioxidant capacity in intervention group was statistically significant in comparison to control group ($P<0.05$).

Conclusion: The results of the study indicated that the glutamine supplementation for two weeks with an increase in serum total antioxidant capacity and reduction in serum levels of leptin, IL-6 and OX-LDL may be considered as an important indicator of anti-inflammatory and anti-oxidative effects of glutamine that may play an important role on the health of people. However, the glutamine supplementation may prevent harmful effects of exhaustive exercise by controlling inflammatory factors and oxidative damages in healthy male people.

Keywords:

Glutamine, Leptin, Total Antioxidant Capacity (TAC), IL-6, OX-LDL, Exhaustive exercise, Young males