

L-Carnitine Supplementation and Exercise-Induced Muscle Damage

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Abstract : Introduction: The protective effect of antioxidants in diminishing the post-exercise rise of serum CK and LDH in individuals trained for competitive sports has come to light in recent years. This study was conducted to assess the effect of Two-week L-carnitine supplementation on exercise-induced muscle damage, as well as antioxidant capacity after a bout of strenuous exercise in active healthy young men. Methodology: Twenty active healthy men volunteered for this study. Participants were randomized in a double-blind placebo-controlled fashion into two groups: L-carnitine (C group; n = 10) and placebo group (P group; n = 10). The participants took supplementation (2000 mg L-carnitine) or placebo (2000 mg lactose) daily for 2 weeks before the main trial. Then, participants ran 14 km. Blood samples were taken before supplementation, before exercise, immediately, 2h and 24h after exercise. Creatine kinase (CK), and lactate dehydrogenase (LDH), and total antioxidant capacity (TAC) were measured. Results: Serum CK and LDH significantly increased after exercise in both groups ($p < 0.05$). Serum LDH was significantly lower in C group than P group 2h and 24h after exercise ($p < 0.05$). Furthermore, CK was significantly lower in C group compared with P group just 24h after exercise ($p < 0.05$). Plasma TAC increased significantly 14 days after supplementation and 24h after exercise in C group compared with P group ($p < 0.05$). Discussion and conclusion: These results suggest two-week daily oral supplementation of L-carnitine has been able to promote antioxidant capacity before and after exercise and decrease muscle damage markers through possibly inhibition of exercise-induced oxidative stress.

Keywords : L-carnitine, muscle damage, creatine kinase, Lactate dehydrogenase

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