

The effect of carnitine administration on the aerobic physical exercise capacity in rats

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Abstract

Background. The controversies regarding the effects of carnitine administration on the exercise capacity in sportsmen determined us to perform experimental studies.

Aims. The purpose of this research was to study the effect of carnitine supplementation and exercise on oxidative damage and antioxidant status in rat blood.

Methods. Research was made on 2 groups of rats, containing 10 animals each: group I – control and group II – supplemented with carnitine, administered daily, post-exercise, for 30 days. The indices of the oxidants/antioxidants balance have been measured in venous blood in days 14 and 30.

Results. The chronic 30 days administered supplements positively influenced the aerobic exercise capacity. The ergotrope effects appeared after 14 days and lasted during all the period of administration and influenced the oxidants/antioxidants balance in trained animals with significant increases of the oxidative stress indicators (lipid peroxides) and with significant decreases of the antioxidant defence indicators (hydrogen donor capacity).

Conclusions. Carnitine supplementation has antitrophotrope and proergotrope effects in trained animals. As a whole, the results of our experimental researches plead for a complex action of carnitine on different physiologic and biochemical parameters, with both favourable and adverse effects. Thus, the prudence to recommend carnitine administration in human subjects is justified.

Keywords: carnitine, exercise, aerobic capacity, oxidants/antioxidants balance.