The influence of Complex Antioxidant supplementation on oxidative stress parameters and aerobic capacity in trained rats

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Abstract

Background. Changes in the oxidative metabolism were observed during physical exercise, regarding the intensity and resistance to exercise, the physical training and the antioxidant status. Therefore, administration of natural antioxidants could improve the exercise capacity by decreasing the effort induced by the oxidative stress.

Aims. We studied the effect of Complex Antioxidant (CA) supplementation on the oxidant/antioxidant balance and the exercise capacity.

Methods. The study was conducted on 3 groups of Wistar white rats (n=10 animals per group): group I - sedentary control group - received CA; group II - trained control group; group III - trained rats which received CA. The training lasted for 28 days and the exercise capacity was measured during the swim test in days 1, 7, 14, 21 and 28. The oxidant/antioxidant balance was measured according to the serum levels of malondialdehyde (MDA), sulfhydryl groups (SH) and hydrogen donors (DH) in days 1 and 28.

Results. A significant increase of MDA and significant decreases of SH and DH were observed in group II after 28 days of training. Significant decreases of MDA were observed in group II after the administration of CA and 28 days of training. The exercise capacity was significantly increased after training in groups II and III, with more important increases in group III.

Conclusions. Complex Antioxidant decreased the oxidative stress and improved the effort capacity in trained animals.

Keywords: physical exercise, oxidative stress, Complex Antioxidant, malodialdehyde, sulfhydryl groups, hydrogen donors.