The effect of phosphocreatine supplementation on the oxidants/ antioxidants balance during physical exercise

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Abstract

Background. Creatine (CR) is one of the most widespread dietary supplements, mainly used in physical activity as an energogen.

Aims. The influence of phosphocreatine (PCR) among sports people on the oxidants/antioxidants (O/AO) equilibrium and on the creatinine (CRN) is explored.

Methods. The research was conducted on two groups of athletes control group 1 (n=8): students at the Faculty of Sports and Physical Education of the Babeş-Bolyai University, (average age 25.4 ± 0.6 years, average weight 80.5 kg); and exercise group II, n=8 – athletes exercise, trained for 21 days with daily phosphocreatine (Phospho creatin-R) supplementation. Samples were taken on day 0 (before training – T_1) and on day 21 (after training – T_2). The following biochemical urine indicators were analyzed: malondialdehyde (MDA), hydrogen donors (DH) and and creatinine (CRN).

Results. A 21-days training, with and without PCR supplementation, does not influence the increase of MDA elimination in sportspeople. Urine elimination of MDA significantly increases in both groups. After 21 days of training a significant decrease of urine elimination of DH was observed. The elimination is not influenced by the administration of PCR. The training leads to a significant increase of CRN elimination which is not influenced by the CR supplementation. SO is maintained after 21 days of training in athletes with and without PCR supplementation. The O/AO equilibrium, which has been analyzed in the urine samples of athletes trained for 21 days, is influenced by the PCR intake. Oxidative stress is maintained owing to MDA, which also increases associated with the decrease of the antioxidant effect based on DH.

Conclusions. PCR supplementation among athletes has an energogenic effect without reducing oxidative stress.

Keywords: phosphocreatine, athletes, exercise, oxidative stress, creatinine.