

Abstract

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Alpha-tocopherol supplementation prevents the exercise-induced reduction of serum paraoxonase 1/arylesterase activities in healthy individuals.

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OBJECTIVE: To investigate PON 1/Aryl activities in basketball players with or without alpha-T supplementation pre- and post-training. Vitamin E (alpha-tocopherol, alpha-T) reduces lipid peroxidation. Paraoxonase 1/arylesterase (PON 1/Aryl) activities are closely related to oxidation and atherogenesis.

SUBJECT/METHODS: Blood was obtained from 10 players pre- (group A), post-exercise (group B) and after 1 month on alpha-T (200 mg per 24 h orally) supplementation pre- (group C) and post-exercise (group D). Lactate, pyruvate, muscle enzyme activities, creatine kinase, lactate dehydrogenase and total antioxidant status (TAS) were measured with commercial kits. Catecholamines and alpha-T were determined with high-performance liquid chromatography methods and PON 1/Aryl activities spectrophotometrically.

RESULTS: Lactate, pyruvate, muscle enzyme activities and catecholamines were increased ($P < 0.001$) in all groups post-training. Alpha-T levels remained unaltered pre- vs post-exercise. TAS was decreased in all the groups post training. PON 1/Aryl activities were significantly decreased post-exercise (group B) (PON1: 65 ± 12 U min⁻¹ ml⁻¹, Aryl: 58 ± 14 KU min⁻¹ ml⁻¹) as compared to those pre-exercise (group A) (PON1: 142 ± 16 U min⁻¹ ml⁻¹, Aryl: 114 ± 12 KU min⁻¹ ml⁻¹, $P < 0.001$). In contrast, the studied enzyme activities remained practically unaltered after alpha-T supplementation pre- vs post-training. Both enzyme activities positively correlated to TAS ($r = 0.60$, $P < 0.001$).

CONCLUSIONS: Alpha-T supplementation may result in protection of the enzyme PON 1/Aryl activities from free radical production.

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