Effect of vitamin E supplementation on lipid peroxidation and the antioxidant defense responses following an exhausting aerobic exercise

Choobineh S[1]; Akbarzade H[2]; Naghizadeh H[3*]

1. Department of Physical Education & Sport Sciences, University of Tehran, Tehran, Iran
2. Department of Physical Education & Sport Sciences, University of Yazd, Yazd, Iran
3. Department of Physical Education & Sport Sciences, University of Ardakan, Yazd, Iran

Received: 18.06.2013 Accepted: 27.08.2013

Abstract

Background: physical exercise could induce lipid peroxidation as a result of oxidative stress. And intake of antioxidant compound may alleviate this stress by enhancing antioxidant defense. This study aimed to investigate the effect of vitamin E supplementation as an antioxidant on the lipid peroxidation and serum total antioxidant capacity following exhaustive continuous aerobic exercise in wistar rats.

Methods: 28 wistar rats aged 4 month were assigned randomly into one of 4 groups: rest, rest vitamin E, continuous aerobic exercise, and continuous aerobic exercise-vitamin E. The supplement groups, were administrated a dose of 250 IU per one kilogram of daily intake food for one month of supplementation. All groups were subjected a familiarization treadmill protocol for two weeks. Finally, rats in continuous aerobic exercise groups exercised at 70% vo_2 max. The running speed was 20 m/min at a gradient 5%. Serum malon dealdehyde (MDA) and total antioxidant capacity (TAC) were measured. Data were analyzed by one way ANOVA and sheffe post hoc at $P<0.05$ level.

Results: The MDA increased significantly following continuous aerobic exercise ($P<0.05$) but vitamin E could not decrease significantly the elevated response of MDA following exercise. However The TAC was higher significantly in continuous aerobic vitamin E group compare to the rest group ($P<0.01$).

Conclusion: vitamin E supplementation despite of enhancement of the antioxidant capacity cannot prevent lipid peroxidation following continuous aerobic exercise in wistar rats.

Key words: Vitamin E, Total antioxidant capacity, Continuous aerobic exercise, Oxidative stress

[*] Corresponding Author: Department of Physical Education & Sport Sciences, University of Ardakan
Tel: +98 9133587199, Email: naghizadeh2011@gmail.com

[Downloaded from tkj.ssu.ac.ir on 2026-11-19]