

Enhanced erythrocyte antioxidant status following an 8-week aerobic exercise training program in heavy drinkers

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Abstract

Alcohol-induced oxidative stress is involved in the development and progression of various pathological conditions and diseases whereas exercise training has been shown to improve redox status, thus attenuating oxidative stress-associated disease processes. **PURPOSE:** to evaluate the effect of an exercise training program on blood redox status in heavy drinkers. **METHODS:** Eleven sedentary, heavy drinking men participated in an intervention where they completed an 8-week supervised aerobic training program of moderate intensity. Blood samples were collected before, during (week 4) and after intervention and analyzed for total antioxidant capacity (TAC), thiobarbituric acid reactive substances (TBARS), protein carbonyls (PC), uric acid (UA), bilirubin, reduced glutathione (GSH) and catalase activity. **RESULTS:** Catalase activity increased ($p < 0.05$) after 8 weeks (340.7 ± 13.3 U mg/Hb) of intervention compared to week 4 (299.5 ± 18.7 U mg/Hb). GSH increased ($p < 0.05$) after 8 weeks of intervention (1.22 ± 0.16 $\mu\text{mol/g Hb}$) compared to the control condition (1.11 ± 0.17 $\mu\text{mol/g Hb}$) and to week 4 (1.11 ± 0.15 $\mu\text{mol/g Hb}$). TAC, UA, bilirubin, TBARS and PC did not significantly change at any time point. **CONCLUSION:** An 8-week aerobic training program enhanced erythrocyte antioxidant status in heavy drinkers, indicating that aerobic training may attenuate pathological processes caused by alcohol-induced oxidative stress.