

## EFFECTS OF FOUR WEEKS TREADMILL TRAINING ON CARDIAC TISSUE LACTATE DEHYDROGENASE ISOFORMS ACTIVITIES AND HEPATORENAL BIOMARKERS IN EXPERIMENTALLY INDUCED HYPERHOMOCYSTEINEMIA IN RATS

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The aim of this study was to investigate the effects of experimentally induced hyperhomocysteinemia independently and also in the condition of aerobic treadmill training on hepatorenal biomarkers in sera, and on lactate dehydrogenase (LDH) isoforms activities in cardiac tissue of rats.

Male *Wistar albino* rats were divided into four investigated groups (10 per group): C: saline (0.9% NaCl 0.2 mL/day s.c.); H: homocysteine (0.45 µmol/g b.w./day s.c.); CPA: saline (0.9% NaCl 0.2 mL/day s.c.) and a program of aerobic training on a treadmill; and HPA: homocysteine (0.45 µmol/g b.w./day s.c.) and a program of aerobic training on a treadmill. Injection of substances was applied 2 times a day at intervals of 8h during the first two weeks of experimental protocol. After four weeks samples of blood and cardiac tissue were taken for analysis.

Homocysteine level in sera was significantly higher in the HPA group compared to the CPA group ( $p < 0.01$ ). Glucose, proteins, albumin, aspartate aminotransferase, alanine aminotransferase, urea, creatinine and amylase levels in sera were all higher in both active groups compared with the sedentary group: CPA ( $p < 0.01$  vs. C;  $p < 0.01$  vs. H) and HPA ( $p < 0.01$  vs. C;  $p < 0.01$  vs. H). Total activity of LDH was increased in the HPA group in comparison to all other groups ( $p < 0.01$  vs. C;  $p < 0.01$  vs. H;  $p < 0.01$  vs. CPA). In HPA group, relative activities of LDH isoforms were significantly higher compared to the C and H group: LDH 1 ( $p < 0.01$  vs. C;  $p < 0.01$  vs. H), LDH 2 ( $p < 0.01$  vs. C;  $p < 0.01$  vs. H) and LDH 4 ( $p < 0.01$  vs. C;  $p < 0.01$  vs. H).

Experimentally induced hyperhomocysteinemia under the condition of aerobic treadmill training can lead to increased concentrations of hepatorenal biomarkers in sera and increased activity of LDH in cardiac tissue of rats.

**Keywords:** Exercise; Heart; Homocysteine; Lactate dehydrogenase; Rat