EFFECTS OF OVERNUTRITION ON THE ENZYMES ANTIOXIDANTS ACTIVITY AND OXIDATIVE STRESS LEVELS IN LIVER OF YOUNG RATS

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Introduction: The modern lifestyle has contributed to the increase of chronic diseases in adulthood. It is known, however, that this is a factor that is reflected from childhood. Studies related to liver dysfunction have shown that injuries in the liver may be mediated by oxidative stress due to high production of reactive species. Aim: Thus our aim was evaluate the effect of overnutrition on the liver antioxidant capacity and oxidative stress. Materials and Methods: Male Wistar rats were divided according to the mother’s number pups. Control group (n=9), and Overnutrition (n=3). The offspring was reduced at 3 days of live. At 30 days of age, the liver was removed and homogenized. We evaluate the levels of lipid peroxidation, protein oxidation, sulphydryl content, superoxide dismutase and catalase activity, levels of reduced glutathione (GSH) and oxidized glutathione (GSSG), and GSH/GSSG ratio. Results: Our results showed a significant increase of lipid peroxidation (Control: 0.051 ± 0.00981 vs Overnutrition: 0.236 ± 0.0199 nmol/mg protein, p<0.05), increase on the sulphydryl content (0.0613 ± 0.00500 vs Overnutrition: 0.0734 ± 0.00256 µmol/mg protein, p<0.05), a significant superoxide dismutase activity (Control: 11.1 ± 0.676 vs Overnutrition: 14.2 ± 0.974 U/mg protein, p<0.05) and decrease in catalase activity (Control: 11.7 ± 1.12 vs Overnutrition: 8.83 ± 0.623 U/mg protein, p<0.05), in Overnutrition group when compared to Control group. We observe that protein oxidation was not significant (Control: 17.8 ± 2.10 vs Overnutrition: 17.1 ± 2.78 µmol/mg protein), levels of GSH (Control: 91.6 ± 4.11 vs Overnutrition: 109 ± 6.73 µmol/mg protein), levels of GSSG (Control: 26.3 ± 0.704 vs Overnutrition: 26.7 ± 1.14 µmol/mg protein) and GHS/GSSG ratio (Control: 3.48 ± 0.122 vs Overnutrition: 3.93 ± 0.426 µmol/mg protein) was not significant. Conclusions: Ours data suggest that overnutrition induced oxidative damaged and alterations in the activity of antioxidants enzymes in liver of young rats, without cause alters in redox state.

Key Words: Overnutrition, Oxidative Stress, Liver.

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