NEONATAL OVERNUTRITION: EFFECTS IN THE HEPATIC METABOLISM OF YOUNG RATS

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Introduction: Excess nutrient supply and rapid weight gain during early life are risk factors for the development of obesity and related diseases during adulthood. Aim: Thus our aim was evaluate the effects of overnutrition in the hepatic metabolism of young rats. Methods: Were used 30-day-old Wistar male rats. For inducing the overnutrition, the offspring was reduced to 3 pups per cage and the control group was kept with 10 pups per cage. After lactation(21days), pups began receiving Labina-Purina®. We evaluate the activity of the enzyme citrate synthase, phosphofructokinase (PFK-1) and Glucose-6-phosphate dehydrogenase (G6PDH), serum albumin, alanine transaminase (ALT), aspartate transaminase (AST) levels, liver weight and weight ratio of organ and body weight. All results were expressed as percentage compared to control group. Statistical analysis was performed using the unpaired "t" Student test (p<0.05). Results: In the PFK-1 activity, we observed no difference between the groups (p<0.717), however it was observed an increase of 443%(p<0.005) in the G6PDH activity and 56%(p<0.014) in citrate synthase of overnutrition group compared with the control. The serum albumin levels (p<0.447) and AST (p<0.09) no showed difference between the groups, though the overnutrition group showed decrease of ALT 45% (p<0.002). The liver weight increased 16%(p<0.018) on the overnutrition group compared with the control and weight ratio of organ and body weight was decrease 24% (p<0.027). Conclusion: Our results suggest that the overnutrition during the developmental period of young male rats proved that liver of overnutrition is lower compared to your body, which shows decrease in intracellular transaminases and no change in production albumin. Though, an increase of citrate synthase activity suggests larger activity of cycle Krebs, which produces essential coenzymes to the redox balance of the body; and increase of G6PDH activity suggest rise of substrate for the metabolism of glutathione.

Keywords: Overnutrition, liver, metabolism

Supported by: FACEPE.