RESTRICTION PROTEIN DURING THE PREGNANCY AND LACTATION AND ITS IMPLICATIONS IN THE HEPATIC METABOLISM OF FEMALE RATS

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Introduction: In critical period of development, the body can be influenced by outside factors, which may induce chronic metabolic changes in different organs. Objective: Evaluate the effects of protein restriction in the hepatic metabolism of female rats.

Methodology: Wistar rats were divided according to the mother’s diet. Control group (17% casein), and low protein (LP) group (8% casein). After lactation (21 days), pups received Labina®. At 30 days, females were sacrificed and evaluated liver and animal weight, lipid peroxidation, antioxidant enzymes activity (catalase and superoxide dismutase (SOD)), metabolic enzymes activity (phosphofructokinase (PFK), β-hydroxyacyl CoA dehydrogenase (β-Had), citrate synthase (CS)) and serum albumin (Labtest®). The statistical analysis was performed using unpaired Student “t” test (p<0.05). All results were expressed as percentage compared with the control group.

Results: Our results showed a reduction in both, animal (33.67%, n= 6, p<0.001) and liver weight (31.14%, n=6, p=0.01) in LP group when compared to C group. There was increase in lipid peroxidation in LP group (61%, n=5, p<0.0001), accompanied by an increase in the catalase activity (71.72%, n=5, p<0.01). However, SOD activity wasn’t different between groups. It was also observed a reduction in PFK (61.11%, n=5, p<0.01) and β-Had activity (45.45%, n=4, p<0.01) and an increase in the CS activity (83.53%, n=5, p<0.05) of LP group compared to control. Albumin levels were significantly lower in LP group (20.86%, n=6, p<0.0001). Conclusion: Our data suggest that perinatal protein restriction alters the hepatic oxidative metabolism and reduce the glycolytic pathway and the β-oxidation of fatty acids. In addition, the decrease in albumin levels suggests that the increased activity of the Krebs cycle occurs due to a higher protein catabolism, which could justify the weight loss observed in malnourished animals.

Key Words: Protein restriction, metabolism, liver.

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