



Obesity Induced by High Fat Diet Impairs Glucose Tolerance and Insulin Sensitivity in Rats

Silva, L.M.P¹; César, L.C.C¹; Silva, J.J.T²; Duarte, G.I.B.P³; Rabelo, L.A⁴; Souza, V.N⁵

¹Undergraduate Students-Biomedicine- CB – UFPE;²PhD Student of Postgraduate Program in Biochemistry and Physiology - CB-UFPE. ³Professor/Researcher - dDepartment of Physiology and Pharmacology – CB – UFPE. ⁴Professor/Researcher- Institute of Biological Sciences and Health – ICBS – UFAL. ⁵Professor/Researcher - Department of Physiology and Pharmacology– CB-UFPE

ABSTRACT

Introduction: Obesity is a chronic disease, besides a risk factor for cardiovascular diseases, nowadays, it is characterized as a worldwide epidemic. The food imbalance and physical inactivity are factors that contribute to the emergence of obesity as well as diabetes. **Objective:** To evaluate the injury on glucose tolerance and insulin sensitivity in obese rats induced by high fat diet. **Methodology:** Male Rats Wistar (8 weeks old) were submitted to the standard diet (chow group, 11.8% kcal-Lipids; n = 5) and dietary intervention with high fat diet during 8 weeks (HFD group, 58.4% kcal-Lipids; n= 5). It was evaluated the body weight weekly, and fasting and fed blood glucose. At the end of the experimental period, was measured the glucose tolerance, insulin sensitivity and gluconeogenesis. After the animal sacrifice, it was analyzed relative weight of white adipose tissue, as well as the adipocytes diameter (epididymal white adipose tissue) and circulating levels of leptin. **Results and Discussion:** The group HFD presented higher body weight (from the 2nd week of diet), an increase accumulation of epididymal and perirenal white adipose tissue. In addition, in these animals, it was observed a significant increase in the adipocytes diameter and the levels of leptin in plasma when compared to animals chow, indicating obesity with increased release of cytokines. In HFD group, the fasting blood glucose levels were significantly higher in the 6th week of high fat diet consumption compared to the chow group. Adding up to the frame of obesity, at the end of the 8th week of high fat diet consumption, the obese group had higher fasting plasma glucose in fed state, glucose intolerance, insulin resistance, as well as increased gluconeogenesis as compared with the chow group. **Conclusion:** Obesity with adipocyte hypertrophy, induced by high fat diet, induces glycemic damages, as the elevation of blood glucose, glucose intolerance and lower insulin sensitivity in rats.

Keywords:

High Fat Diet; Obesity; Glucose intolerance; Insulin resistance

*Correspondence to Author:

Silva, L.M.P

Undergraduate Students-Biomedicine- CB – UFPE

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