CAFETERIA DIET INDUCES NON-ALCOHOLIC FATTY LIVER ACCOMPANIED BY AN INCREASE IN THE RATE OF VLDL SECRETION IN WISTAR RATS

MELO, AF\(^1\); CHAVES, VE\(^1\)

\(^1\)Universidade Federal de São João Del Rei – Campus Centro-Oeste/Dona Lindu, Minas Gerais, Brasil.

Several studies have demonstrated that the insulin resistance induces an increase in the VLDL secretion into bloodstream. Previous data have showed that rats fed the cafeteria diet have reduced gluconeogenesis, suggesting that the liver tissue is sensitive to insulin. The aim of this study was to evaluate the effect of the cafeteria diet on the content of liver lipids and the rate of VLDL secretion. Wistar rats (~70g) were fed a comercial diet and water \textit{ad libitum} [control group (CG) \(n=8\)] and commercial diet plus 12 hipercaloric items and water containing 20% sucrose [cafeteria group (CF) \(n=8\)] for 24 days. Body weight was monitored. The animals were sacrificed, the organs removed and weighed (g), and the blood collected for serum analysis (mg / dL) using a commercial kit. Lipid content (mg/g) was determined by Folch method. VLDL secretion was evaluated by difference of serum triacylglycerol before and after administration of Triton WR 1339 (20%) in fasting rats. Data were analyzed by Student's \(t\) test with \(P<0.05\) as significance criterion. Final body weight was similar between the groups (219\(\pm\)9.1vs.216\(\pm\)10;\(P<0.05\)) however the weight of retroperitoneal (0.27\(\pm\)0.03vs.0.88\(\pm\)0.10;\(P<0.05\)) and epididymal (0.60\(\pm\)0.04vs.1.01\(\pm\)0.09;\(P<0.05\)) adipose tissue was higher in cafeteria diet-fed rats. Cafeteria diet induced also an increase in content of total lipid (44.0\(\pm\)1.3vs.55.0\(\pm\)3.5;\(P<0.05\)) triacylglycerol (4.5\(\pm\)0.27vs.9.9\(\pm\)0.94;\(P<0.05\)) and cholesterol (1.9\(\pm\)0.04vs.2.45\(\pm\)0.20;\(P<0.05\)) in liver accompanied by increase in the VLDL secretion (294.7\(\pm\)45.2vs.360.1\(\pm\)42.0;\(P<0.05\)) when compared to control group. Despite of an accumulation of liver lipid, the cafeteria diet did not change the serum AST (179.9\(\pm\)12,23vs.194.1\(\pm\)13.89;\(P<0.05\)) and ALT (286.5\(\pm\)53,81vs.205.4\(\pm\)22.05;\(P<0.05\)). Cafeteria diet-fed rats have an increase in serum triacylglycerol (42.0\(\pm\)4vs.114.0\(\pm\)10;\(P<0.05\)) without serum changes in glucose (116.0\(\pm\)5vs.113.0\(\pm\)8;\(P<0.05\)), cholesterol (68.0\(\pm\)10vs.81\(\pm\)14;\(P<0.05\)) and uric acid (1.74\(\pm\)0.06vs.1.76\(\pm\)0.08;\(P<0.05\)). Our data demonstrate that the cafeteria induces non-alcoholic fatty liver disease and increase in VLDL secretion, spite of liver insulin sensibility.

**Keywords:** Cafeteria diet, Non-alcoholic fatty liver disease, Secretion of VLDL.