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SERUM INSULIN RESPONSE AFTER ACUTE AND CHRONIC SUCRALOSE INGESTION IN HEALTHY PATIENTS WITH VARIABLE BODY MASS INDEX

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In recent years, the consumption of non-caloric sweeteners (NCS) has considerably increased but several publications suggest that their use is associated with insulin resistance. Therefore the aim of this study was to determine the effect of chronic exposure to sucralose on the insulin metabolism and glucose in young, healthy adults with different body mass index stage.

Material and methods: A randomized, double-blind, placebo-controlled clinical trial was conducted in healthy volunteers with the homeostatic model assessment (HOMA index) less than 3.8, from 18 to 35 years aged and without metabolic alterations. Each patient was assigned to one of the 3 different intervention groups: 1) 48 mg/60 ml of sucralose, 2) 96 mg/60 ml of sucralose and 3) 60 ml of water, which should be a daily intake for 10 weeks. An oral glucose tolerance test was made to each patient (OGTT). The areas under the curve (AUC) of the OGTT were calculated and the data were analyzed with the statistical package SPSSv.17 with the Wilcoxon test considering a significant P value <0.05.

Results: We recruited 96 volunteers. The insulin AUC was significantly increased in the second OGTT on the 48 mg sucralose intervention group (AUC=9262 to 11398, P=0.02) and 96 mg of sucralose (AUC=6962 to 8393, p=0.03), but not the water group (AUC=9054 to 9396; P=NS). The basic metabolic characteristics such as urea, creatinine and monocytes were similar in the three groups. However, the final analysis in the group with the highest concentration of sucralose (96 mg/dL) showed significant changes at the serum concentrations of urea (22.3 mg/dL to 25.4 mg/dL), creatinine (0.78 mg/dL at 0.84 mg/dL) and monocytes (0.42 mg/dL to 0.36).

Conclusions: The chronic consumption of sucralose had a significant effect on the insulin and glucose metabolism in healthy young adults with different BMI.