

TOXICOLOGICAL EFFECTS OF SUCRALOSE ON LIVER AND KIDNEYS OF ALBINO RATS

**Thesis
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Abstract

The consumption of foods and beverages containing artificial sweeteners has significantly expanded over the past few decades. The main reasons to use sugar substitutes are: to help weight loss, to diminish the risk of dental disorders and to provide palatable food for some patients such as diabetics. Artificial sweeteners include acesulfame-potassium, aspartame, advantame, neotame, saccharin, alitame and cyclamates and sucralose. In addition to stevioside and rebaudioside A. Sucralose is an intense artificial sweetener produced by chlorination of sucrose so it is a chlorinated disaccharide, 600 times sweeter than sucrose, and is very stable at high temperatures. It was approved by the FDA, in 1998, to be utilized in foods, beverages, pharmaceutical products and vitamin supplements. The present study evaluates the effect of long-term intake of sucralose on liver and kidneys. 50 albino rats divided into three groups as follows: First group served as negative control group which was given water freely. The second group was given sucralose dissolved in water in a dose of 5 mg/kg/day via oral route. The third was given sucralose at a dose of 125 mg/kg/day. Rats that had received sucralose (5 mg/kg & 125 mg/kg) in the drinking water for 12 weeks showed a significant increase in activities of ALT, AST, ALP and insignificant reduction in albumin level in different study groups. Kidney function tests were insignificantly increased in all the experimental groups. Histopathological examination revealed liver necrosis in sucralose groups with higher effect on liver tissues among the high dose group, liver fibrosis among the high dose group. Most kidneys of rats of sucralose group showed no histopathological changes, while some of the low dose group showed only slight congestion of the glomerular tufts and some of the high dose

group showed focal interstitial and perivascular inflammatory infiltrate and congestion of the glomerular tufts. It can be concluded from these observations that long-term consumption of sucralose leads to hepatocellular injury without alteration to liver function and non-significant effect on kidneys.

Key words: artificial sweetener, sucralose, liver, kidneys