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Effect of sodium benzoate on some biochemical, physiological and histopathological aspects in adult male rats

Abstract

Sodium benzoate (SB) is a white powder, used as preservative and food additive. Biochemical, physiological and histopathological effects of SB been tested in adult male rats. Twenty-four adult albino male rats aged 100 day and weighted 250-350 g were used. Animals were divided into four groups. The first group considered as control, which received normal saline orally, other groups treated with SB by 300, 400 and 500 mg/kg of body weight respectively for 30 days. At the end of experiment, blood samples were collected from retro orbital sinus. Heart, liver, spleen, kidneys and brain were obtained for weight recording. The results indicated a significant decrease of super oxide dismutase SOD activity and a significant increase of nitric oxide NO level of treated group 500 mg/kg of body weight. Moreover, findings revealed that there are no significant changes in growth hormone GH activity and body weight. A significant reduction of heart weight of treated group 500 mg/kg of body weight were observed. The histopathological changes ranged from mild to severe in the brain cortex, as focal gliosis, satellitosis, mild vacuolation and vasogenic edema in treated groups with SB by different doses. Also, some changes were observed in liver represented by congestion of portal vein, mild hydropic degeneration of hepatocytes, stenosis of sinusoids, steatosis and necrosis of hepatocytes in treated groups with SB compared to control group. It concluded that short-term exposure to high doses of SB may be considered an oxidant substance that caused oxidative stress. Furthermore, SB can harm various organs in the body