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Toxic Effect of Food Preservative Disodium Citrate on Biochemical Parameters in Swiss Albino Male Mice †

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Abstract: Food preservatives have become more in trend to keep food safe from spoilage for a long time. The preservation technique stops the growth of microorganisms and increases the shelf life of food. Food preservatives need to be checked for harmful effects on human health before they can be used. Sodium citrate is colorless and found in the form of crystals. It is used as an antioxidant in food and to improve the effects of other antioxidants. It is also used as an acidity regulator and is found in gelatin, jam, sweets, ice cream, carbonated beverages, milk powder, wine, and processed cheese. To examine the toxicity of disodium citrate, male Swiss albino mice were used as an experimental model, and they were divided into two groups. Group I: control group received water, Group II: disodium citrate; 177 mg/kg of body weight. Doses were administered orally for 30 days, 45 days, and 60 days. Animals were sacrificed on 31st day, 46th day, and 61st day. Blood was collected, and serum was extracted and used for performing liver function tests. In liver function tests, the value of SGPT and LDH were significantly increased at 46th and 61st days ($P<0.001$; very highly significant). SGOT, ALP, and GGT values were significantly increased at all the autopsy intervals ($P<0.001$). There was a significant decrease in total protein on 46th day ($P<0.001$). The value of bilirubin was significantly increased on 31st and 61st days ($P<0.05$). A rise in liver function indicators after the treatment of food preservative at a dose of 177 mg/kg of body weight indicate the toxicity of disodium citrate.

Keywords: disodium citrate; biochemical parameters; liver function tests.

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Conflicts of Interest

The authors declare no conflict of interest.