

Toxicological and Histopathological Studies on the Effect of Tartrazine in Male Albino Rats

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Abstract : Tartrazine is an organic azo dyes food additive widely used in foods, drugs, and cosmetics. The present study aimed to investigate the toxic effects of tartrazine on kidneys and liver biomarkers in addition to the investigation of oxidative stress and change of histopathological structure of liver and kidneys in 30 male rats. Tartrazine was orally administrated daily at dose 200 mg/ kg bw (1/ 10 LD₅₀) for sixty days. Serum and tissue samples were collected at the end of the experiment to investigate the underlying mechanism of tartrazine through assessment oxidative stress (Glutathione (GSH), Superoxide dismutase (SOD) and malondialdehyde (MDA) and biochemical markers (alanine aminotransferase (ALT), aspartate aminotransferase (AST), Total protein and Urea). Liver and kidneys tissue were collected and preserved in 10% formalin for histopathological examination. The obtained values were statistically analyzed by one way analysis of variance (ANOVA) followed by multiple comparison test. Biochemical analysis revealed that tartrazine induced significant increase in serum ALT, AST, total protein, urea level compared to control group. Tartrazine showed significant decrease in liver GSH and SOD where their values when compared to control group. Tartrazine induced increase in liver MDA compared to control group. Histopathology of the liver showed diffuse vacuolar degeneration in hepatic parenchyma, the portal area showed sever changes sever in hepatportal blood vessels and in the bile ducts. The kidneys showed degenerated tubules at the cortex together with mononuclear leucocytes inflammatory cells infiltration. There is perivascular edema with inflammatory cell infiltration surrounding the congested and hyalinized vascular wall of blood vessel. The present study indicates that the subchronic effects of tartrazine have a toxic effect on the liver and kidneys together with induction of oxidative stress by formation of free radicals. Therefore, people should avoid the hazards of consuming tartrazine.

Keywords : albino rats, tartrazine, toxicity, pathology

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