

Evaluation of Biochemical Changes in Some Liver Functions and Anti-Oxidant Parameters in Wistar Rats Exposed to Benzene

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Abstract : Benzene is a volatile organic compound that is recognised as carcinogenic to humans. The objective of the current investigation was to ascertain the impact of the administration of Benzene at varying concentrations on the livers of Wistar rats. The 40 adult female Wistar rats were divided into 10 groups, each consisting of four rats. For 28 days, Group 1 received distilled water, while Groups 2 to 10 were administered 0.04, 0.06, 0.08, 0.2, 0.4, 0.6, 0.8, 1.0, and 1.2 ml/kg body weight of analytical grade benzene. Blood samples were obtained through cardiac puncture for liver function assessment, while the animals in groups 1 to 5 were euthanised after the 28th day under chloroform anaesthesia. The animals in groups 6 to 10 died midway through the study period. Antioxidant analysis was conducted on liver tissues that were collected and homogenised. The results indicated a substantial ($p < 0.05$), dose-dependent increase in serum alanine aminotransferase (ALT), aspartate aminotransferase (AST), and alkaline phosphatase (ALP) activities as a result of Benzene exposure. Additionally, Benzene resulted in a substantial reduction in the activities of superoxide dismutase (SOD), catalase (CAT), and glutathione peroxidase (GPx) in liver tissue, as well as an increase in malondialdehyde (MDA) concentrations, and this effect was dose-dependent. These findings emphasise the hepatotoxic effects of Benzene, even at concentrations that are relatively low.

Keywords : benzene, alanine aminotransferase, aspartate aminotransferase, alkaline phosphate, antioxidants, superoxide dismutase, catalase, Glutathione peroxidase

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