

Effect of exposure to inhalation of selected petroleum products on liver function of male albino rats: A comparative study

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This study examined the comparative effect of exposure to inhalation of kerosene, diesel, petrol and a mixture of kerosene, diesel and petrol on liver function of male albino rats. Group 1 served as the normal control. Groups 2, 3 and 4 were exposed to inhalation of kerosene, diesel and petrol respectively. While group 5 were exposed to inhalation of a mixture (equal volumes) of Kerosene, Diesel and Petrol. The test animals were exposed to the different petroleum products (five hours daily) for twenty-one consecutive days before the biochemical analysis. The serum liver enzymes ALT, AST and ALP increased in all the test animals exposed to inhalation of the petroleum products when compared to the control. ALT increased significantly ($p \leq 0.05$) in group 4, but increased non-significantly in groups 2, 3 and 5 compared with the control (group 1). AST increased significantly ($p \leq 0.05$) in all the groups compared to the control with highest increase in the group exposed to diesel. ALP also increased significantly ($p \leq 0.05$) in all the test animals compared to the control with highest increase in group 3. Total bilirubin increased significantly ($p \leq 0.05$) in all groups exposed to the petroleum products with the highest increase in group 4 when compared with the control. Haematological analysis showed a significant ($p \leq 0.05$) reduction in WBC levels in groups 2, 3 and 5, and a non-significant reduction in group 4 compared with the control. RBC increased significantly ($p \leq 0.05$) only in group 3 and increased non-significantly in groups 2, 4 and 5. Hb increased non-significantly ($p \leq 0.05$) in group 2 and 3, and decreased non-significantly in group 4 and 5 compared with the control (group 1). PCV increased non-significantly ($p \leq 0.05$) in groups 2 and 3, but reduced non-significantly in groups 4 and 5 compared to the control. Histological analysis of liver section from rat in group one (normal control) show essentially normal histoarchitecture of the liver tissue, but exposure of the animals to inhalation of the petroleum products showed distorted arrangement or alterations of the normal histoarchitecture of the liver sections compared with the control. The results of this study showed that exposure of the albino rats to inhalation of petroleum products can cause slight alteration in haematological parameters, but can cause significant alteration in levels of liver function parameters and distortion in normal histoarchitecture of the liver tissue and therefore, can cause hepatic damage.

Keywords: Diesel, Inhalation, Kerosene, Liver, Petrol.

Biography

Dr. Chinedu Imo is a Senior Lecturer in the Department of Biochemistry, Federal University Wukari, Nigeria. His area of specialization is Clinical/Medical Biochemistry. He is a renowned researcher/speaker.