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# Biochemical, histopathological and molecular alterations in albino mice as biomarkers for exposure to acetamiprid insecticide

**Authors:**
**Duha Zeki Al-Swefee[1], Ahmed Jasim Mohammed[1] and Salah M. Al-Chalabi[2]**

**Institution:**
1. Department of Biology, College of Science, University of Baghdad, Baghdad, Iraq.

2. Biotechnology Researches Center, Al-Nahrain University, Baghdad, Iraq.

**Corresponding author:**
**Duha Zeki Al-Swefee**

**ABSTRACT:**

The present study aimed to investigate the effects of acetamiprid (ACMP) on biochemical, histological and molecular aspects of albino mice. Forty albino mice at the age of 6-8 weeks and average weight 25±5 g were divided into four groups each having 10 healthy mice. The first group was orally administrated with distilled water while the second, third and fourth groups were orally administrated with 10, 20 and 40 mg/kg of acetamiprid respectively, (0.1mL) daily for six week. $LD_{50}$ of acetamiprid was measured and found to be 200mg/kg. The parameters of biochemical evaluations included liver function by analyzing Aspartate aminotransferase (AST), Alanine aminotransferase (ALT) and Alkaline phosphatase (ALP). Lipid profile was analyzed through total cholesterol (TC), Triglycerides (TG), High Density Lipoprotein (HDL), Low Density Lipoprotein (LDL) and Very Low Density Lipoprotein (VLDL). Antioxidant factors that Superoxide Dismutase (SOD), Malondialdehyde (MDA), Catalase (CAT) and Glutathione Peroxidase (GPx). Liver and kidney tissues were taken as markers for histopathology, and % tail DNA as a marker for DNA damage. The results of biochemical parameters have shown significant differences ($P<0.01$) between control and acetamiprid concentrations. The lipids and liver function enzymes were increased as compared with control. MDA values recorded significantly increased compared to the control while SOD, CAT and GPx were decreased compared with the control. There are some alterations in tissues, also comet assay was a marvelous tool to assess the potential genotoxicity of acetamiprid. The study suggested that acetamiprid 40 mg/kg significantly affected the albino mice.

**Keywords:**

Acetamiprid, Cholesterol, Liver function, MDA, CAT, SOD, Comet assay, Kidney.

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