



University of zabol

Graduate school

Faculty of science

Department of biology

The Thesis Submitted for the Degree of Master of Science

(In the field of Plant Physiology)

Title:

Investigating some secondary compounds and the protective ability of the hydroalcoholic extract of Kakuti (*Ziziphora clinopodioides*) in the condition of liver damage induced by thioacetamide

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Abstract

Due to the negative side effects of synthetic medications, the usage of medicinal plants has increased in importance over time. In this investigation, 30 Wistar rats were divided into three groups of 10, each receiving physiological serum orally. The second group (PC=Positive Control) received thioacetamide at a dose of 50 mg/kg intraperitoneally three times at 24-hour intervals; physiological serum was supplied orally three days after the last intraperitoneal injection and continued for three weeks. The third group (T=Treatment) received hydroalcoholic extracts of Kakoti with three dosages of 5, 10, and 20 mg/kg orally for three weeks, similar to the second group, which received thioacetamide injections for three days and oxidative conditions. It was determined the levels of alanine transaminase (ALT), aspartate transaminase (AST), and catalase (CAT). The findings demonstrated that toxicity in the PC group led to liver toxicity and increased blood levels of ALT and AST enzymes, as well as the activity of CAT enzyme, in comparison to the NC group of rats. The current investigation revealed that the level of ALT and AST enzymes significantly ($p < 0.0001$) reduced in rats intoxicated by thioacetamide and treated with different concentrations of hydroalcoholic extract of Kakoti, compared to those intoxicated with thioacetamide without treatment (PC). In addition, the amount of malondialdehyde was decreased in the injured liver treated with the extract (T) compared to the injured liver without treatments (PC), but the amount of glutathione was increased. Our findings showed that the antioxidant ability of the hydroalcoholic extract of Kakoti, which is the result of the bioactive components present, protects the liver against acetamide-induced damage.

Keywords: Alanine transaminase, Aspartate transaminase, Catalase, *Ziziphora clinopodioides*