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**Toxicological and Chemical Studies of Some *Heliotropium  
Curassavicum* L. Extracts on Rats**

*A Thesis*

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*By*

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## ABSTRACT

This study aimed to evaluate the rodenticidal activity of acetonic, methanolic and mixture of both extracts of *Heliotropium curassavicum* on adult male albino rats as alternatives to conventional rodenticides.

Quantitative phytochemical screening of the plant revealed the presence of alkaloids, flavonoids, phenols and tannins in varying amounts. Chemical constituents of the acetonic and methanolic extracts were analyzed using gas chromatography/mass spectrum (GC/MS) and liquid chromatography/mass spectrum (LC/MS), respectively. The major components in the acetonic extract were diisooctyl phthalate (21.96 %) and benzene, (1- pentylheptyl) (7.7 %), whereas kaempferol (23.73 %) and lapachol (14.00 %), in the methanolic extract.

For toxicological studies; The LD<sub>50</sub> of the acetonic and methanolic extracts of the plant were found to be 12.500 gm/kg and 16.500 gm/kg, respectively after 72 hrs. of treatment. The toxic effects of the (1/20 LD<sub>50</sub>) of acetonic, methanolic and a mixture of both extracts were studied comparatively with zinc phosphide under laboratory conditions, as well as control groups (tween 80, vegetable oil and distilled water) for 28 days. Results revealed a significant increase in the level of ALT, AST, ALP, ACP, total lipids and total soluble protein as affected by all tested treatments compared to control groups. While, there is a significant decrease in the level of  $\alpha$ ,  $\beta$ -esterases, AchE and GABA. Furthermore, there is a significant increase in the frequency of micronucleus cells production in the bone marrow of the treated rats compared to the control groups. Also, DNA fragmentation was observed in liver and brain tissues after treatment with the plant extracts and zinc phosphide. Histopathological findings showed deformities structures in the liver, brain and spleen tissues that proved the previously mentioned results. Generally, the mixture of both extracts more toxicant than the individually extract.

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