Zagazig University
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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_{50} 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_{50}) 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 α, β-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.

CONTENTS

LIST OF FIGURES

	(C) Multi-micronui	
26	A micrograph of micronucleated polychromatic erythrocytes prepared from bone marrow cells of male rats treated with (0.825 gm/kg b.wt.) of methanolic *H. curassavicum* extract for 28 days showing variation in their shape: **(A)** Almond shape **(B)** Rounded mass **(C)** Rod-like structure **(D)** Dot-like structure	**91**
27	A micrograph of micronucleated polychromatic erythrocytes prepared from bone marrow cells of male rats treated with (0.825 gm/kg b.wt.) of methanolic *H. curassavicum* extract for 28 days showing variation in their in their number: **(A)** Single micronucleus **(B)** Bi-micronuclei **(C)** Multi-micronuclei	**92**
28	A micrograph of micronucleated polychromatic erythrocytes prepared from bone marrow cells of male rats treated with mixture of acetonic and methanolic *H. curassavicum* extracts (0.625 and 0.825 gm/kg b.wt.), respectively for 28 days showing variation in their shape: **(A)** Almond shape **(B)** Rounded mass **(C)** Rod-like structure **(D)** Dot-like structure	**93**
29	A micrograph of micronucleated polychromatic erythrocytes prepared from bone marrow cells of male rats treated with mixture of acetonic and methanolic *H. curassavicum* extracts (0.625 and 0.825 gm/kg b.wt.) respectively for 28 days showing variation in their in their number: **(A)** Single micronucleus **(B)** Bi-micronuclei	**94**

	infiltration **(curved arrow)** and hydropic degeneration in large number of hepatocytes **(arrow head).** H&E. X 200 (**K**), 400 (**L**).	
58	Photomicrograph of brain tissues of control group treated with tween 80 for 28 days showing apparently normal brain tissue H&E. X 100 (**A**).	**136**
59	Photomicrograph of brain tissues of control group treated with vegetable oil for 28 days showing normal histomorphology of the cerebral structures. H&E. X 100 (**B**).	**136**
60	Photomicrograph of brain sections of control group treated with distilled water for 28 days showing normal histomorphological structures. H&E. X 100 (**C**).	**136**
61	Photomicrograph of brain section of group treated with acetonic extract of *H. curassavicum* at dose (0.625 gm/kg b.wt.) for 28 days, revealed focal neuronal degeneration **(open arrow**), coagulative necrosis of some axons **(stars)** and focal malacia **(closed arrows).** H&E X 200 (**D**), 400 (**E**).	**137**
62	Photomicrograph of brain section of group treated with methanolic extract of *H. curassavicum* at dose (0.825 gm/kg b.wt.) for 28 days, showing Perivascular and perineural edema beside degeneration of moderate number of neurons in the cerebral cortex (**arrows**). H.&E. X400 (**A**)	**137**
63	Photomicrograph of brain section of group treated with both acetonic and methanolic extracts of *H. curassavicum* at dose (0.825and 0.625 gm/kg b.wt.), respectively for 28 days (**G &H**) revealed perivascular edema**,** focal gliosis **(open arrow)** beside axonal degeneration and demylination **(closed arrows).** H&E. X 100 (**G**), 400 (**H**).	**138**
64	Photomicrograph of brain section of group treated with zinc phosphide at dose (0.005gm/kg b.wt.) for 28 days, showing vacuolation **(open arrows)**, perivascular edema **(stars)** and hemorrhage **(curved arrow)**. The lateral ventricles showing dilatation with edema and congestion	**139**

LIST OF TABLES