

**EFFECT OF SOME FORMULATED PLANT
EXTRACTS ON SNAILS OF SCHISTOSOMIASIS AND
STUDY THEIR BIOLOGICAL EFFECTS**

By:
Mohsen Hamid Hassan El-Behary
(B. Sc. In Chemistry 1990)

**A Thesis Submitted In
Partial Fulfillment Of The Requirement For The Master Degree**

**In
Environmental Science
Department Of Biological & Natural Sciences**

**Institute Of Environmental Studies & Research
Ain Shams University**

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In

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ABSTRACT

Three aqueous plant extracts flowers, leaves and stems of *calendula officinalis* plant were tested against two types of snails *Biomphalaria alexandrena* and *Bulenus truncatus* as twenty snails introduced per two liters laboratory water jars with continuous daily feeding by both lettuce plant and algae for snails. The procedure was carried out as following, four serial concentrations of different plant parts were applied as following: (0.05, 0.10, 0.20 and 0.40 g) of dried extracts, each concentration had three replicates, in addition to control for both types of snails. The results obtained were registered after one, six, twenty-four and forty- eight hours from exposure to both snails. The data obtained showed that the best effects were obtained from ethanol extract followed by methylene chloride, chloroform and hexane extracts respectively.

The biological studies were carried by using formulated ethanolic extract of *C.officinalis* flowers with (0.40 g), which fed to *albino rats*. Determination of different biological investigations such as liver function tests (ALT, AST, ALP, GGT, ALB, total proteins, globulin and total bilirubin.), kidney function tests (creatinine, urea, sodium and potassium), thyroid hormones (T_3 , T_4 and TSH) and cholinesterase enzyme. These studies were applied for three months under laboratory conditions by the same concentration used (0.40 g).

The results showed no toxic effect of this formulated extract of *C. officinalis* flower (0.40 g) on the biological tests applied. For Comparison between the results of formulated extracts of *C. officinalis* flowers and that obtained from the pesticide applied Niclosamide, results cleared that in all cases of the previous biological studies on *albino rats* there was no toxic effect of this formulation of *C. officinalis* flowers, while in case of Niclosamide the results showed an elevation in the levels of each thyroid hormones, (T_3 , T_4 and TSH), some kidney function tests such as;

(urea, creatinine, sodium and potassium.), Liver function tests, (ALT, AST, ALP, GGT, albumin, total bilirubin. and total proteins.) and also Cholinesterase enzyme.

In conclusion; *Calendula* extracts can be used safely in control of *Biomphalaria alexandrena* and *Bulenus truncatus* snails without toxic effects of the molluscicides used.

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LIST OF ABBRIVIATIONS

ALT	:	Alanine transaminase
ALP	:	Alkaline phosphatase
AMP	:	Adeno monophosphate
AST	:	Aspartate transaminase
B. alexandrena	:	Biomphalaria alexandrena
B. truncatus	:	Bulenus truncatus
B.wt	:	Body weight
°C	:	Degree centigrade
Ch. E	:	Choline esterase
Cm	:	Centimetre
C. officinalis	:	Calendula officinalis
Conc.	:	Concentration
DD.W	:	Deionized distilled water
Fam.		Family
EIA	:	Enzyme Immuno Sorbent Assay
EZ	:	Enzyme zorbent
g	:	Gram
GGT	:	Gamma glutamyl transaminase
Gp	:	Group
LC ₅₀	:	Concentration which killed 50 % animal
LC ₉₀	:	Concentration which killed 90 % animal
mg/dl	:	Milligram per decilitre or percentage
ml	:	Milliliter
µl	:	Microliter
min	:	Minute
mIU/ml	:	Micro international unit per milliliter

mM	:	Micrometer
mmol/L	:	Millimoles per litter
Mole/L	:	Moles per litter
N	:	Normal
nm	:	Nanometer
Nm/min	:	Nanometer per minute
PH	:	Minus logharitm of hydrogen concentration
PPM	:	Part per million
Rpm	:	Round per minute
SD	:	Standard deviation
T ₃	:	Tri Iodo Thyronine
T ₄	:	Tetra Iodo Thyronine or thyroxine
U/L	:	Unit per liter
TSH	:	Thyroid Stimulating Hormone
Tsp.	:	Tea spoon
v/v	:	Volume per volume
WHO	:	World Health Organisation
wt/v	:	Weight per volume
wt /wt	:	Weight per Weight