

**THE EFFECT OF SOME FRESH WATER  
POLLUTANTS ON THE SNAIL VECTORS  
OF SCHISTOSOMIASIS IN EGYPT**

*By*

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B. Sc. (Agric.) 1976, Ain Shams University

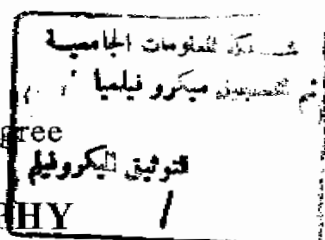
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## APPROVAL SHEET

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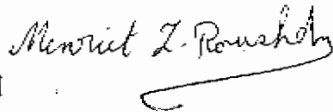
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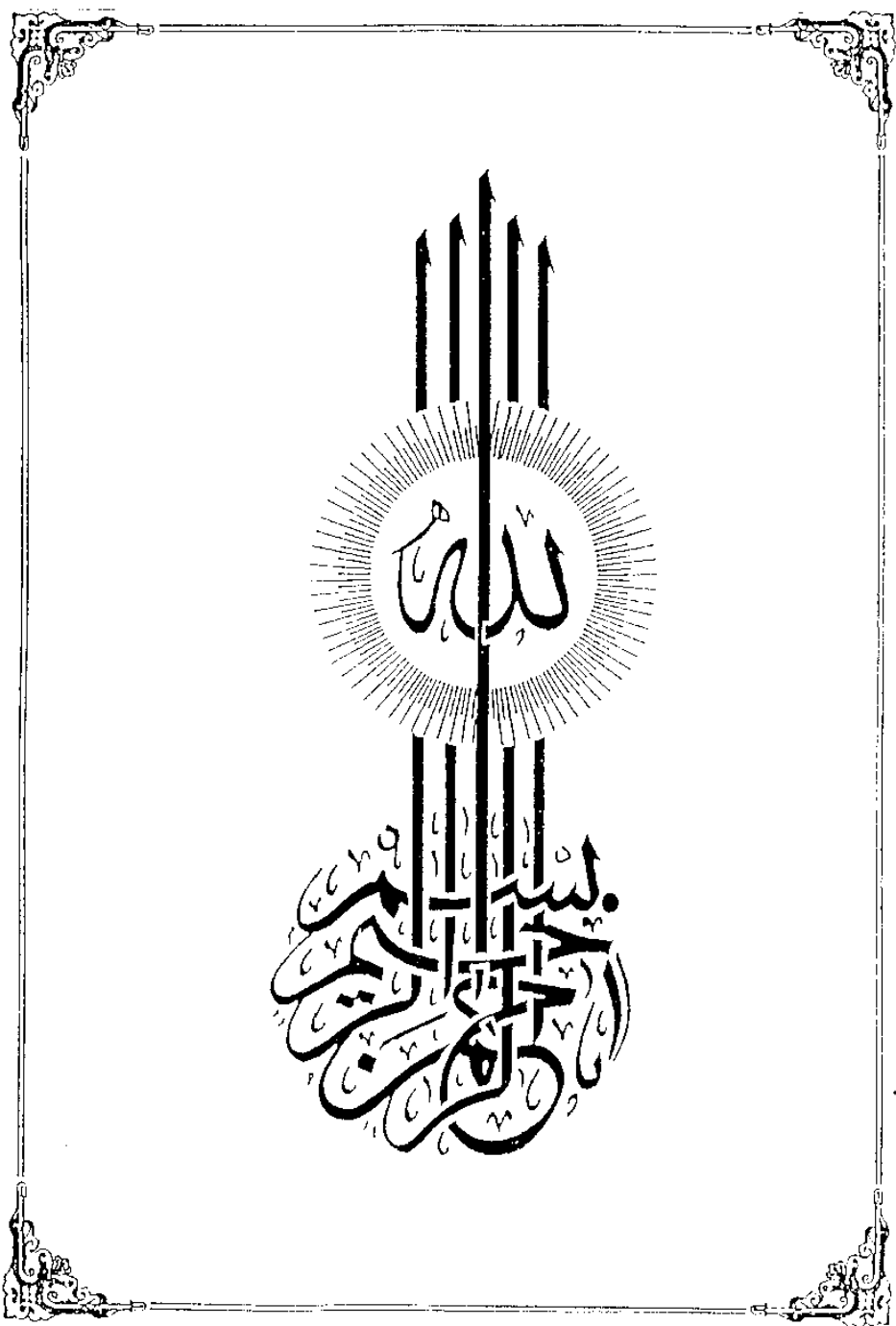
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## ABSTRACT

Field survey showed that distribution and population density of snail vectors of schistosomiasis are variable in the tested polluted water bodies. This may be attributed to the differences in the physical, chemical and biological properties of snail habitats.

Data indicated that there was an relation between the crop rotation in the surrounded area and the properties of water in the tested drain. Generally, the snail vectors, especially *B.truncatus*, reduced or disappeared from habitats contained high levels of minerals, fertilizers and pesticides. The same was found in water depth, settleable matter, suspended solids, suspended organic matter, pH, total soluble salts, chemical oxygen demand and in the presence of associate aquatic plants and other snail species.

Data also indicated that the time required for repopulation of *B.truncatus* snails was longer than that required for *B.alexandrina* snails. This may be due to pollution of water and higher susceptibility of *Bulinus* species to different pollutants than *B.alexandrina* snails.

Data showed that *B.truncatus* snails had their major peak of abundance during March in the surveyed canal, while the minor peak recorded during May in the drain. On the other hand, *B.alexandrina* snails showed the major peak during November and May in the drains, while the minor peak occurred at March in the canal.

Data showed that all collected schistosomiasis snails from the studied polluted water bodies were found free from cercariae of the human schistosomes.

Results of laboratory bioassay evaluation tests showed that Nile water proved more favorable to the snails than natural water from the studied polluted water bodies and dechlorinated tap water. Copper, nickel and lead ions showed the highest molluscicidal activity, followed by cadmium and sodium ions. Potassium ions had the least toxic effect on the two snail species. *B.truncatus* snails stopped laying eggs completely with 0.04 ppm of  $\text{Cu}^{+2}$  ions after two weeks of exposure. Mortality rate of newly hatched snails of *Bulinus* exposed to 0.11 ppm of  $\text{Ni}^{+2}$  ions reached 100% after 4 weeks of exposure period. Both snail species stopped laying eggs completely at 360 ppm of  $\text{Na}^{+}$  ions. The fertilizer ammonium nitrate showed some effects on mortality rate of the newly hatched and egg masses of tested snails.

The tested insecticides; Reldan and Malathion showed lower molluscicidal activity than that occurred with tested herbicides; Saturn, Rifit and Ronstar.

Data showed that most of various concentrations of minerals such as  $\text{Cu}^{+2}$ ,  $\text{Pb}^{+2}$ ,  $\text{Ni}^{+2}$ ,  $\text{Na}^{+}$  and fertilizer ammonium sulphate, herbicides Saturn, Rifit and Ronstar killed or / and inactivated high ratio of miracidia and cercariae of *Schistosoma mansoni*.

The herbicide Saturn and  $\text{Na}^{+}$  ions increased the activity of the tested molluscicides; Niclosamide, copper sulphate and *Anagallis arvensis* plant against *B.alexandrina* snails. While  $\text{Cu}^{+2}$ ,  $\text{Ni}^{+2}$  and  $\text{K}^{+}$  ions increased the molluscicidal activity of *Anagallis arvensis* plant.

The present study presented some suggestions to achieve effective and successful mollusciciding operation.

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# **CONTENTS**

	<i>Page</i>
<b>I. INTRODUCTION .....</b>	<b>1</b>
<b>II. REVIEW OF LITERATURE .....</b>	<b>4</b>
1. Distribution and population of the snail vectors of schistosomiasis in Egypt. ....	4
2. Some factors affecting the distribution and population density of snail vectors of schistosomiasis in Egypt. ....	5
2.1 Chemical factors. ....	5
2.1.1. Mineral contents of water. ....	5
2.1.2. Salinity. ....	7
2.1.3. Hydrogen ion concentration (pH). ....	9
2.1.4. Suspended organic matter, suspended solids and settleable matter. ....	10
2.1.5. Dissolved oxygen (DO) and chemical oxygen demand (COD). ....	11
2.1.6. Pollution. ....	12
2.1.6.1. Heavy metals. ....	14
2.1.6.1.1. Copper, nickel, lead and cadmium. ....	14
2.1.6.2. Chemical fertilizers. ....	16
2.1.6.3. Herbicides and insecticides. ....	17
2.1.6.4. Mode of action of some chemical materials. ....	19
2.2 Physical factors. ....	21
2.2.1. Temperature. ....	21
2.2.2. Winter closure and level of water. ....	23

	<i>Page</i>
2.3. Biological factors .....	23
2.3.1. Associated aquatic weeds. ....	23
2.3.2. Associated snails. ....	25
3. The effect of some chemicals on the activity of miracidia and cercariae. ....	27
4. Snail control. ....	29
4.1. Molluscicides. ....	30
4.1.1. Chemical molluscicides. ....	30
4.1.2. Plant molluscicides. ....	32
4.2. Season of application of molluscicides in Egypt. ....	33
<b>III. MATERIALS AND METHODS</b> .....	35
1. Field studies. ....	36
1.1. Distribution and seasonal variation in snail populations in some polluted water bodies.....	36
1.2. Determination of some ecological factors in tested polluted water bodies. ....	44
2. Laboratory experiments. ....	47
2.1. Pollutants used. ....	47
2.2. Snails. ....	49
2.3. Collection of egg masses of snails. ....	50
2.4. Culture of newly hatched snails. ....	50
2.5. Collection of miracidia and cercariae. ....	50
2.6. The molluscicidal activity of tested organic and inorganic chemicals. ....	50
2.7. The effect of tested pollutants on mortality rate and egg-laying capacity of snails. ....	52
2.8. The effect of tested pollutants on egg hatch of snails.....	54
2.9. The effect of tested chemicals on the activity of miracidia and cercariae of <i>Schistosoma mansoni</i> . ....	55



2.10.The effect of some tested pollutants on the toxicity of some molluscicides. ....	57
<b>IV. RESULTS</b> .....	60
1.Field studies. ....	60
1.1.Distribution of snail vectors of schistosomiasis in tested polluted water bodies. ....	60
1.1.1.Rural environment, harboring both snail species....	60
1.1.2.Rural environment, free from both snail species.....	65
1.1.3.Urban environment, harboring both snail species...	66
1.1.4.Urban environment, harboring <i>Biomphalaria alexandrina</i> . ....	67
1.1.5. Urban environment, free from both species. ....	68
1.2.Population density of snail vectors of Schistosomiasis in tested polluted water bodies. ....	75
1.2.1.Secondary drain at Meet El-Deba village. ....	75
1.2.2.Secondary drain at Roiena area. ....	87
1.2.3.El-Shakeria irrigation canal. ....	98
1.2.4.Kafr Hakem drain. ....	108
1.2.5.Ismailia irrigation canal. ....	116
2. Laboratory studies. ....	126
2.1.Effect of polluted water from drains and canals on schistosomiasis snails. ....	127
2.1.1.Secondary drain at Meet El-Deba village. ....	127
2.1.2.Secondary drain at Roiena area. ....	134
2.1.3.El-Shakeria irrigation canal (urban environment with snails). ....	139
2.1.4.Kafr Hakem drain (rural environment, free of snail vectors). . ....	143

	<i>Page</i>
2.1.5.Ismailia irrigation canal (urban environment, free of snails). .....	147
2.2.Effect of tested minerals on schistosomiasis snails.....	151
2.3.Effect of tested fertilizers. ....	156
2.4.Effect of tested pesticides. ....	156
2.5.The molluscicidal activity of tested organic and inorganic chemicals. ....	163
2.6.The effect of some water pollutants on the toxicity of studied molluscicides. ....	176
2.7.The effect of tested chemicals on the activity of miracidia and cercariae of <i>Schistosoma mansoni</i> .....	176
<b>V. DISCUSSION</b> .....	<b>188</b>
<b>VI. SUMMARY</b> .....	<b>210</b>
<b>VII. REFERENCES</b> .....	<b>223</b>
<b>ARABIC SUMMARY</b> .....	<b>243</b>

## ***LIST OF TABLES***

<b><i>Table No.</i></b>	<b><i>Page</i></b>
1- Concentrations used from the tested chemicals to determine LC50 and LC90 values, against <i>B.alexandrina</i> and <i>B.truncatus</i> snails.	51
2- Concentrations used from the tested chemicals to study their effect on mortality rate and egg-laying capacity of snails.	53
3- Concentrations used from the tested chemicals to study their effect on the activity of miracidia and cercariae of <i>Schistosoma mansoni</i> .	56
4- Some physical and chemical properties of water samples from the tested locations during November, 1994-1995.	61
5- Cations of water samples from the tested locations during November, 1994-1995.	62
6- Anions of water samples from the tested locations during November, 1994-1995.	63
7- Molluscs, aquatic vegetations and main pollutants in the tested environment during November, 1994-1995.	64
8- Some physical and chemical properties of the Nile water.	70
9- Cations ands anions of the Nile water samples.	71
10- Molluscs and aquatic vegetations in the main Nile at Misr El-Kadema area, Cairo Governorate during seasons of the year (autumn, 1994 - summer, 1995).	72

<i>Table No.</i>	<i>Page</i>
11- Molluscs, aquatic vegetations and main pollutants in the secondary drain of Meet El-Deba village, Kafr El-Sheikh Governorate (May, 1994 - November, 1995).	76-77
12- Some physical and chemical properties of the secondary drain of Meat El-Deba village (May, 1994 - November, 1995).	78
13- Cations and anions of water samples from the secondary drain of Meet El-Deba village.	79
14- Size frequency distribution of <i>B.alexandrina</i> and <i>B.truncatus</i> snails in the secondary drain at Meat El-Deba village (May, 1994 - November, 1995).	86
15- Molluscs, aquatic vegetations and main pollutants in the secondary drain at Roiena area, Kafr El-Sheikh city (November, 1994-1995).	88-89
16- Some physical and chemical properties of the secondary drain at Roiena area (November, 1994 - 1995).	90
17- Cations and anions of water samples from the secondary drain at Roiena area.	91
18- Size frequency distribution of <i>B.alexandrina</i> snails in the secondary drain at Roiena area (November, 1994 - 1995).	97
19- Molluscs, aquatic vegetations and main pollutants in El-Shakeria canal, Kafr El-Sheikh Governorate (October, 1994 - November, 1995).	99
20- Some physical and chemical properties of El-Shakeria irrigation canal (October, 1994 - November, 1995).	100
21- Cations and anions of water samples from El-Shakeria irrigation canal.	101

<i>Table No.</i>	<i>Page</i>
22- Size frequency distribution of <i>B.alexandrina</i> and <i>B.truncatus</i> snails in El-Shakeria canal (October, 1994 - November, 1995).	107
23- Molluscs, aquatic vegetations and main pollutants in the Kafr Hakem drain, Giza Governorate (October, 1994 - November, 1995).	109
24- Some physical and chemical properties of Kafr Hakem drain, Giza Governorate (October, 1994 - November, 1995).	111
25- Cations and anions of water samples from Kafr Hakem drain.	112
26- Molluscs, aquatic vegetations and main pollutants in Ismailia canal, Cairo Governorate (October, 1994 - November, 1995).	117
27- Some physical and chemical properties of Ismailia irrigation canal, Cairo Governorate (October, 1994 - November, 1995).	118
28- Cations and anions of water samples from Ismailia canal, Mostorod area.	119
29- Effect of Nile water on the mortality rate of <i>B.alexandrina</i> and <i>B.truncatus</i> snails during the period of autumn, 1994 - summer, 1995.	128
30- Effect of Nile water on egg-laying capacity of <i>B.alexandrina</i> and <i>B.truncatus</i> snails.	129
31- Effect of Nile water on percent egg hatch of <i>B.alexandrina</i> and <i>B.truncatus</i> snails.	130

<i>Table No.</i>		<i>Page</i>
32-	Effect of natural water of the secondary drain of Meet El-Deba village on the mortality rate of <i>B.alexandrina</i> and <i>B.truncatus</i> snails.	131
33-	Effect of natural water of the secondary drain of Meet El-Deba village on egg-laying capacity of <i>B.alexandrina</i> and <i>B.truncatus</i> snails.	132
34-	Effect of natural water of the secondary drain of Meet El-Deba village on percent egg hatch of <i>B.alexandrina</i> and <i>B.truncatus</i> snails.	133
35-	Effect of natural water of the secondary drain at Roiena area on the mortality rate of <i>B.alexandrina</i> and <i>B.truncatus</i> snails.	135
36-	Effect of natural water of the secondary drain at Roiena area on egg-laying capacity of <i>B.alexandrina</i> and <i>B.truncatus</i> snails.	136
37-	Effect of natural water of the secondary drain at Roiena area on percent egg hatch of <i>B.alexandrina</i> and <i>B.truncatus</i> snails.	137
38-	Effect of natural water of El-Shakeria canal on the mortality rate of <i>B.alexandrina</i> and <i>B.truncatus</i> snails.	140
39-	Effect of natural water of El-Shakeria canal on egg-laying capacity of <i>B.alexandrina</i> and <i>B.truncatus</i> snails.	141
40-	Effect of natural water of El-Shakeria canal on percent egg hatch of <i>B.alexandrina</i> and <i>B.truncatus</i> snails.	142
41-	Effect of natural water of the secondary drain of Kafr Hakem drain on the mortality rate of <i>B.alexandrina</i> and <i>B.truncatus</i> snails.	144

<i>Table No.</i>	<i>Page</i>
42- Effect of natural water of the secondary drain of Kafr Hakem drain on egg-laying capacity of <i>B.alexandrina</i> and <i>B.truncatus</i> snails.	145
43- Effect of natural water of the secondary drain of Kafr Hakem drain on percent egg hatch of <i>B.alexandrina</i> and <i>B.truncatus</i> snails.	146
44- Effect of natural water of the secondary drain of Ismailia irrigation canal on the mortality rate of <i>B.alexandrina</i> and <i>B.truncatus</i> snails.	148
45- Effect of natural water of Ismailia irrigation canal on egg-laying capacity of <i>B.alexandrina</i> and <i>B.truncatus</i> snails.	149
46- Effect of natural water of Ismailia irrigation canal on the hatched snails percentage of <i>B.alexandrina</i> and <i>B.truncatus</i> .	150
47- Effect of tested minerals on the mortality rate of <i>B.alexandrina</i> and <i>B.truncatus</i> snails.	153
48- Effect of tested minerals on egg-laying capacity of <i>B.alexandrina</i> and <i>B.truncatus</i> snails.	154
49- Effect of tested minerals on percent egg hatch of <i>B.alexandrina</i> and <i>B.truncatus</i> snails.	155
50- Effect of tested fertilizers on the mortality rate of <i>B.alexandrina</i> and <i>B.truncatus</i> snails.	157
51- Effect of tested fertilizers on egg-laying capacity of <i>B.alexandrina</i> and <i>B.truncatus</i> snails.	158
52- Effect of tested fertilizers on percent egg hatch of <i>B.alexandrina</i> and <i>B.truncatus</i> snails.	159