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
M. Sc. Thesis (Agric.) 1987, Ain Shams University

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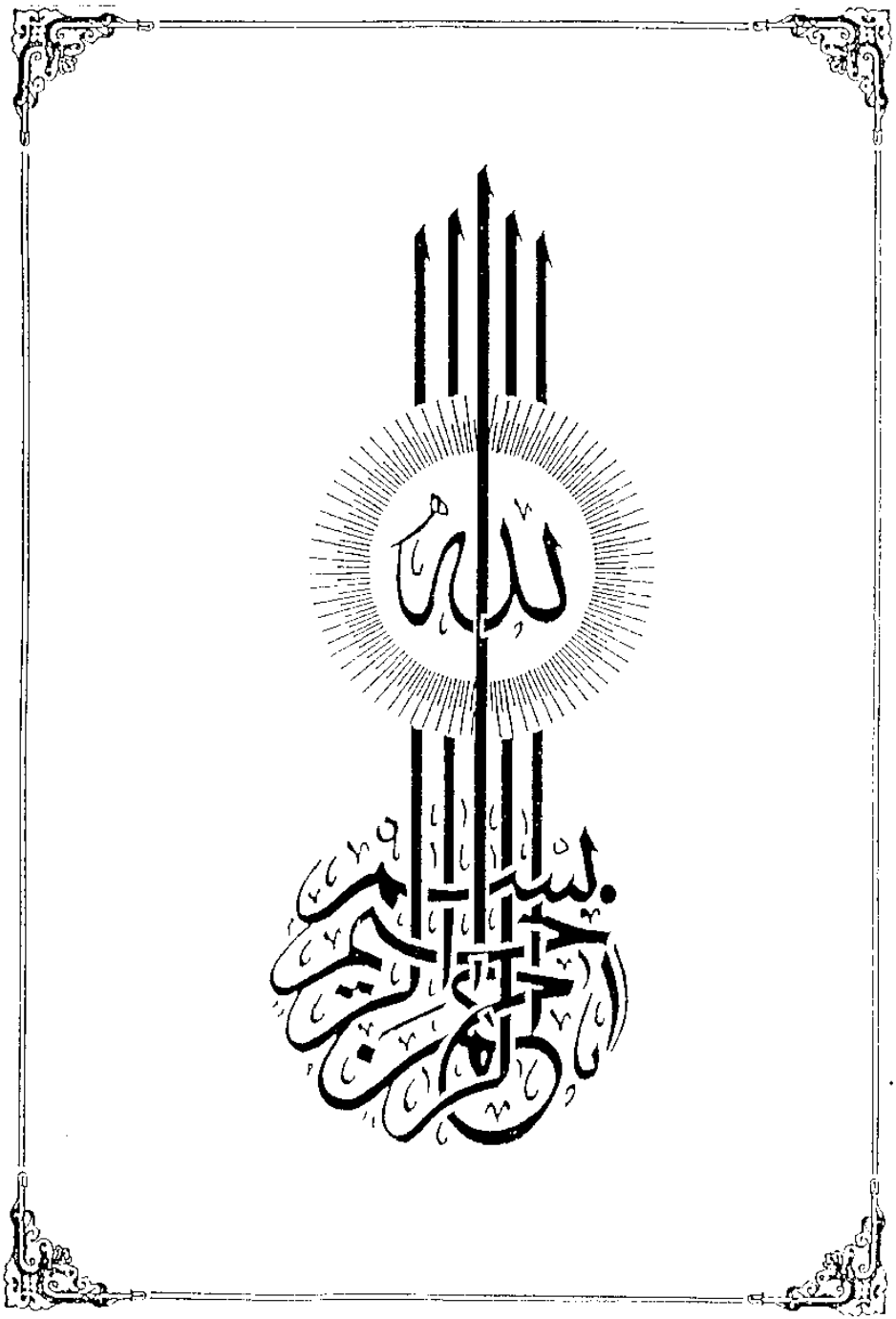

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ABSTRACT

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 Cu^{+2} ions after two weeks of exposure. Mortality rate of newly hatched snails of *Bulinus* exposed to 0.11 ppm of Ni^{+2} ions reached 100% after 4 weeks of exposure period. Both snail species stopped laying eggs completely at 360 ppm of 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 Cu^{+2}, Pb^{+2}, Ni^{+2}, 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 Na^{+} ions increased the activity of the tested molluscicides; Niclosamide, copper sulphate and *Anagallis arvensis* plant against *B.alexandrina* snails. While Cu^{+2}, Ni^{+2} and 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

LIST OF TABLES