International Journal of Healthcare Sciences ISSN 2348-5728 (Online)
Vol. 5, Issue 1, pp: (253-255), Month: April - September 2017, Available at: www.researchpublish.com

Laboratory Assessment of the Molluscicidal Against the Snail at Barakat Area (Irrigated Canal) Wad Medani Gezira State- Sudan (2013)

ALTIJANI Abdelrhman[1], HASSAN Elbashir[2], Hamza Abdullah Mohammed[3], Abdelrahman Samira[4], Nour[5]

PhD, Assisstant Professor, King Khalid University, College of Applied Medical Science, Departments of Public Health[1]
(Wad- Medani, Faculty of Agriculture Science, University of Gezira, Sudan[2]
BPEH - MPEH- PhD Environmental Sciences Faculty of Public Health and Tropical Medicine – Jazan University[3]
Wad- Medani, Blue Nile National Institute for Communicable Diseases, University of Gezira, Sudan[4]
Wad- Medani, Blue Nile National Institute for Communicable Diseases, University of Gezira, Sudan[5]

Abstract: **Objective: Study aimed to assess the molluscicidal agains snail Bulinus truncatus.**
Methods: Extracts of Bayluscide 83.1% WP were activities against adult Bulinus truncatus. The suspected dead snails were examined under a dissecting microscope at 30x magnification, and the LC50 value for the molluscicidal tested were comput (4) ed.
Result: for the molluscicidal activities of Bayluscide 83.1% WP, the LC50 value against Bulinus truncatus was 230 ppm.
The aqueous extract of Bayluscide 83.1% WP is exhibited reasonable molluscicidal activity against the Bulinus truncatus. However, comprehensive laboratory evaluation is recommended prior to field tests of the molluscicidal since their impact on other aquatic biota is not known.

Keywords: **Schistosomiasis, Bulinus truncatus, molluscicidal, Snail.**

I. INTRODUCTION

Schistosomiasis refers to human disease resulting from infection by any of the parasitic blood flukes of Schistosoma spp. Worldwide, it is estimated that over 239 million people are acutely or chronically infected with one or more of these species (2).The term human Schistosomiasis includes a complex group of acute and chronic parasitic infections caused by mammalian water borne blood flukes Schistosoma (1) (5) (5) (6) (7) (8) (7) causing schistosomiasis. The disease is a snail-borne parasitic disease caused by trematodes of the genus Schistosoma, with six species of the infecting including S.haematobium, S. japonicum, S. mansoni, S. intercalatum, S. mekongi and S. malayensis (5).

Some 350 species are estimated to be of possible medical or veterinary importance, most intermediate hosts of human Schistosoma parasite belong to three genera, Biomphalaria, Bulinus and Oncomelania (6). Snails of the genus Bulinus serve as the intermediate host of S. haematobium in Africa and the eastern Mediterranean (6) (7). Intermittent irrigation can also promote the passive transport of Snails as these may be attached to loose debris when irrigation resumes (9). The genus Bulinus truncatus has been found in the surface waters near the main course of the Nile (between Khartoum and Wadi-halfa), and in the pools and water-holes of the valleys of the Blue Nile (from El-roseires to Khartoum) and the White Nile (downstream from El-renk), and also in the south-west corner of Sudan (from Jebal Marra to the area surrounding Malakal and Rumbek) (2).

2. MATERIAL AND METHODS

2.1 Collection of Snail:

Five field- surveys were conducted for collection of aquatic snail from the study area. In each site snails were collected by scooping method using flat wire- mesh. The scope composed of a metal frame (30*30cm) supporting a mesh of 1.5 micro-size attached to an iron handle of 1.5 meter long as described by (10).The sampling technique was conducted by taking many dips, perpendicular to the edge of the canal down to the bottom for a distance of about 0.5-1 meter towards the core of the canal. In each field survey, the collected snails were pooled in a plastic container 10 liter, filled to 1/3 with water and topped with perforated cover. The containers were transported to the laboratory of Blue Nile National Institute for Communicable Diseases, University of Gezira. However all collected snails were cleaned, sorted out and identified (3).Then each species was put in a labeled plastic container. After 24 hours the snails Bulinus truncatus was screened for the natural trematode infection through putting 5 snails in a vial (30 ml) and expose it to a bulb lamb (60 w) for 3 hrs from 9h:00 – 12h:00, and those found liberating any type of cercaria were recorded (3).

2.2 Bayluscide test against Snail Bulinus truncatus:

Snails were cleaned and placed in container (10 litres) filled to half with dechlorinated tap-water for 24 hrs at the Insectary which was set at 25 degree centigrade and 75% Rh. They were put into plastic cups (140 ml) filled to 1/5 with water to keep them fresh. Each cup supported 20 snails. From each cup water was discarded and snails were unloaded separately into Bayluscide 83.1% WP concentrations of 0.00, 154, 175, 180, 192, 200, 240, 250 ppm. Concentrations were kept in plastic containers (1.0 litres) at a volume of 500 ml. Snails were left in these concentrations for 24 hrs before being removed and put in similar plastic containers filled to the half with dechlorinated tap-water for another 24 hrs. Data were showing the dead snails 48 hrs after treatment. The suspected dead snails were examined under a dissecting microscope at 30x magnification. The snail considered dead when out the shell or non- responsive to teasing with blunt needle.

2.3 Data Analysis:

Probit analysis programme was used; the Lc50 of the population was recorded in twenty four hours.

3. RESULT

Table (1) The sensitivity of Snail against Molluscicide (Bayluscide 83.1% WP) in the study area. n= 20

dose/ppm	1	2	3	4	5	6	7
	250	240	200	192	180	175	154
Log10 Dose	2.398	2.38	2.301	2.283	2.255	2.243	2.187
Mortality Rate %	73	88	80	73	48	15	34
Probit	5.58	6.18	5.84	5.58	4.95	3.96	4.59

Fig (1) The response of the snail Bulinus trancatus population to Bayluscide 83.1% WP in the study areas.

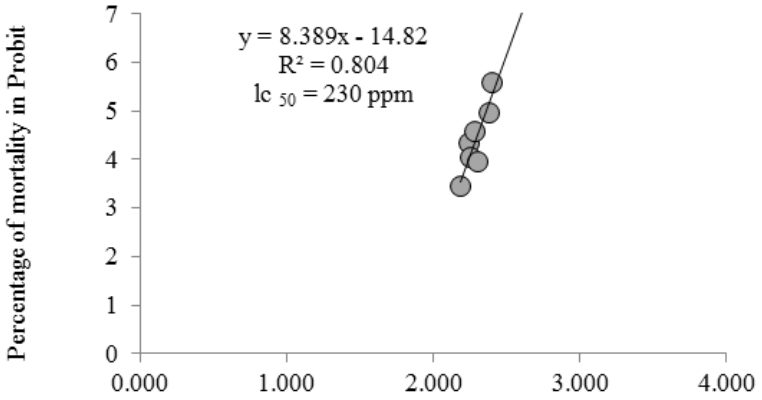

Fig (1) showed that the regression line of the snail Bulinus trauncatus as for as response to various log dose of the Molluscicide (Bayluscide 83.1 % WP) was steeper (8.4). However, the snail was sensitive (Lc50 = 230 ppm) to the used pesticide.

4. DISCUSSION

Plant substances are environmentally safe (9) (10).However, some plant substances were used as Molluscicidal to control snails vectors of schistosomiasis (4) (13)(11) (13) (12).It was found that, some plant substances were so toxic to snails such as the n-Butanol extract of root of solanum elaeagnifolium; it was shown to have Molluscicidal activity with Lc50 of (12 ppm) for Bulinus truncatus (11). This result was so competitive with the Molluscicidal product Bayluscide 83.1% WP that reflected Lc50 (230 ppm) in this study. However, some plant substances were as good as molluscicide used in this study for the control of the Bulinus truncatus such as volatile oil of Cymbopogo nervants which reflected Lc50 (237 ppm) (13). On the other hand a high Lc 50 such as Calotropis procera; Nicotiana tabacum and Trigonella foenum (4). Lc50s for these plants were 3-9 folds that of the molluscicides, Bayluscide 83.1% WP used in this study.

5. CONCLUSION

The aqueous extract of Bayluscide 83.1% WP is exhibited reasonable molluscicidal activity against the Bulinus truncatus. However, comprehensive laboratory evaluation is recommended prior to field tests of the molluscicidal since their impact on other aquatic biota is not known

REFERENCES

[1] WHO. Preventive Chemothereapy in Human Helminthiasis, Coordinated use of Anthelminthic Drugs in Control Intervention: A manual for Professional and Programme Managers. Geneva: WHO , 2006a.

[2] Atlas of the Global Distribution of Schistosomiasis, Sudan. Geneva : WHO, 1987.

[3] Snail Control in the Prevention of Bilharziasis, Monograph series No (50). Geneva: WHO, 1965.

[4] Application of Some Aqueous Plant Exracts as Molluscicidal agents on Bulinus Truncatus in Snails in Sudan. Abdalla M.A, Alla, El-Malik K.H, Bayoumi R.A. 2011, Basic Application Science Research 1(2)., pp. 108- 117.

[5] African Schistosomiasis in Mainland China; Risk of transmission and countermearsures to tackle the Risk. Wang.Wei, You-Sheg, Qing- Biao Homg, Jian- Rong Dai. 2013, Parasites and Vectors, pp. 1-6.

[6] J.A, Rozendaal. Vector controlm Methods for use by Individuals and Communities. Geneva : World Health Organization , 1997.

[7] Rollinson D and Hay I.S. Advances in Parasitology, 1St Edition. London : Elsever , 2010.

[8] Roger, Webber. Communicable Disease Epidemiology and Control, A global Perspective, 2 nd Edtion. London: School of hygiene and tropical medicine, 2005.

[9] Screening of Some Moroccn Plant Extracts for Molluscicidal activity. Larhsini M, Sebbane R, Kchakech H, Markouk M, Bekkouche K, Abbad A, El- Abdouni Khayari M, Sterner O. 2010, Asian journal of Exp.Biol.Sci. 1(4). pp. 964- 967.

[10] Molluscicidal activity of Some Cameroon Plants on Bulinus Species. N.J.K., Ndamukong. 2009, East African Medical Journal 83(3)., pp. 102- 109.

[11] Abdalhalim M, S.A.Mukhtar and I.A Abass. Pesticide, recommended by national Pests and Disease Committee (Glyphosate). Wed madani : Unicersity of Gezira., 2012.

[12] Large Scale Assessment of the molluscicide copper sulphate and N.tritgle morpholine. Amin.M.A. 1972, Tropical Medicine and Hygeine, 75, pp. 169- 175.

[13] Boelee Eline and Madsen Henry. Irrigation and Schistosomiasis in Africa; Ecological Aspects, Research repory 99. Colombo : International Wtaer Management Institute, 2006.

[14] King H. Charles, Amaya L. Bustinduy, Jemery Famar, Peter Hotez, David Lalloo, Nicholas White, GagandeepKang, Thomas Junghanss. Mansons Tropical Disease. London : Elsever, 2014.

[15] Davis Andrew, Gordon G. Cook, Allmuddin L. Zumla. Mason Topical Disease 22 Edition. London : Slsever, 2008.

[16] Molluscicidal Activity of the Essential Oils Of Cymbopogon nervatus Leaves and Boswellia papyrifera Resins. El-Kamali H. Hatil, El-Nour.O.Rehab, Khalid.A.Sami. 2010, Current Research Journal of Biological Sciences., pp. 139- 142.