



(RESEARCH ARTICLE)



Bio efficacy of corm extract of *Arisaema murrayi* against mosquito larvae

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Publication history: Received on 27 November 2019; revised on 09 December 2019; accepted on 17 December 2019

Article DOI: <https://doi.org/10.30574/wjarr.2019.4.2.0096>

Abstract

Arisaema murrayi (sapkanda) is an ancient plant used as food and medicine for many diseases by tribal people. The present study was undertaken to investigate the larvicidal properties of corm extract of *Arisaema murrayi*, against mosquito larvae. The larvae were exposed to a solution prepared from corm extract powder in ethanol. Mortality was assessed within 4-6 hrs. The result indicated that the corm extract has toxic effect on mosquito larvae and therefore has potential for development as commercial bio-insecticide.

Keywords: *Arisaema murrayi*; Mosquito Larvae; Bio-insecticide

1. Introduction

Dengue, malaria and chikungunya struck over 1.13 million people in the country last year. Of these, 766 succumbed. India bears a huge burden of mosquito-borne diseases, contributing 34 per cent of global dengue and 11 per cent of global malaria cases. Insect-borne diseases cause significant human poor health and Death. Current control and preventive methods against vector-borne diseases rely mainly on insecticides. The emergence of insecticide resistance in many disease vectors highlights the necessity to develop new strategies to control these insects [1, 2].

Vector-control strategies in the last century were based on chemical agents such as dichloro-diphenyl-trichloroethane (DDT) [3]. Although insecticides have been successfully used to control mosquitoes of the genera *Aedes* and *Anopheles*, current ecological and environmental protection standards do not allow such approaches because of the adverse effects of many insecticides on non-target species, including humans, their environmental impact, the contamination of soil and water and the development of selective processes and subsequent mosquito resistance to insecticides [4]. *Azadirachta indica*, Neem extract (biopesticide) is an effective insecticide against the insect pests [5,6]. Botanical pesticides exert a range of behavioral and physiological effects on the colonization, development, growth survival and multiplication of insects [7]. The *Azadirachta indica*, *Vitex negundo* and *Parthenium hysterophorus* are the medicinal plants and plays insecticidal role. *Azadirachta indica* and *Parthenium hysterophorus* plant extracts are also efficient against the scarab beetles. These both biopesticides are higher efficiency occurred. *Azadirachta indica* and *Parthenium hysterophorus* plays an important role in insecticides [8].

Arisaema murrayi (sapkanda) is an ancient plant used as food and medicine for many diseases by tribal people. Corm and leaf is reported moderately poisonous. Its ingestion may cause vomiting in animal. So these property of this medicinal plant can use to control growth of mosquito.

The genus *Arisaema* C. Martius represented by about 170 species distributed almost throughout the world. In India there are 43 species and 9 varieties distributed in the Himalaya and Western Ghats. In Maharashtra, the genus *Arisaema* (Species – *Arisaema murrayi* Common name: Murray's Cobra Lily is represented by 7 species. Murray's Cobra Lily is a species of Cobra Lily found in the Western Ghats. It is a tuberous herb, 30-50 cm high. A single leaf, with 5-7 leaflets,

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comes out after the flowers. The inflorescence is typical of the cobra lily plants. The spathe (or the "hood") is 5-15 cm, forming wide tube at the base; the upper part of the spathe is white with purple base. The lower part is green. A deep purple threadlike appendage comes out from the spadix. It is curved and protrudes out of the "hood". Minute flowers reside on the spadix, covered by the spathe [9].

The present study was carried out to evaluate bio efficacy of mosquito derived from Bio-insecticide. An attempt has been made to develop a Bio-insecticide which is more effective, cheap and non- hazardous to the environment pleasant and health friendly using different binders.

Arisaema amurrayi (sapkanda) is an ancient plant used as food and medicine for many diseases by tribal people. To observe larvicidal activity of *Arisaema murrayi* (sapkanda) corm extract.

2. Material and methods

Arisaema murrayi (sapkanda) corm sundried for 3-5 days. Sundried corm grinded to make powder .5gm of powder mix in 200ml ethanol and boiled up to ethanol evaporate .After evaporation of ethanol residue was applied on mosquito larvae. After application of this extract larvae died within 4 hrs (Figure 1).



Figure 1 Photograph showing different stages in methods of extraction and application of corm powder extract

3. Results

The bio-efficacy of four different solutions of corm of *Arisaema murrayi* (sapkanda) on mosquito was showed about 40%, 57%, 71% and 100% death of mosquito larvae was observed in 48 hrs and 51%, 86%, 100% , 10% death of mosquito larvae was observed in 72 hrs respectively (Table 1, figure 2). All four solutions were showed death of larvae in 48 and 72 hrs but 0.02% solution shows 100 % death of mosquito larvae. Mortality was assessed within 48-72 hrs there may be some secondary metabolites are present which are poisonous to these mosquito larvae. These secondary metabolites need to be analyzed.

Table 1 Table showing Effect of Corm extract powder and mortality duration of Mosquito larvae

Test	Conc. of corm Powder mg/L	Mortality Duration			
		48 hrs		72 hrs	
		Number	%	Number	%
50	control	0	-	0	-
50	0.005	28	40	36	51
50	0.01	40	57	60	86
50	0.015	52	71	70	100
50	0.02	70	100	70	100

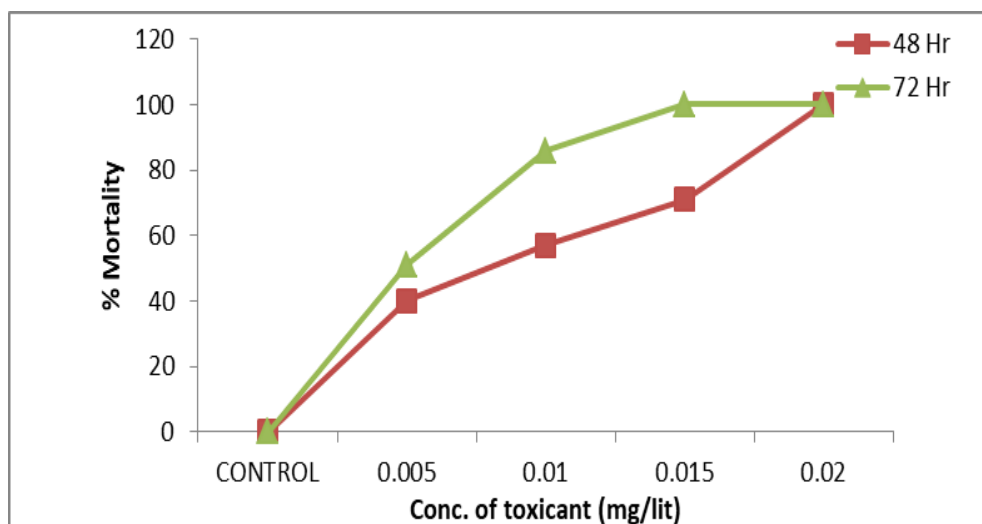


Figure 2 Showing effect of corm extract powder and mortality duration of Mosquito larvae

4. Conclusion

The result indicated that the corm extract has toxic effect on mosquito larvae and therefore has the potential for development as commercial bio-insecticide. This Bio-insecticide will be eco-friendly.

Compliance with ethical standards

Acknowledgments

We are thankful to Dr. S B Patil, HOD. Dept of Zoology, Hutatma Rajguru Mahavidyalaya for his timely help and support.

Disclosure of conflict of interest

Authors declare no conflict of interest exist.

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How to cite this article

Kad A and Jagtap S.M. (2019). Bio efficacy of corm extract of *Arisaema murrayi* against mosquito larvae. World Journal of Advanced Research and Reviews, 4(2), 39-42.
