I J R B A T, Issue (VIII), Vol. I, Jan 2020: 37-39
A Double Blind Peer Reviewed Journal
e-ISSN 2347 – 517X
Original Article

INTERNATIONAL JOURNAL OF RESEARCHES IN BIOSCIENCES, AGRICULTURE AND TECHNOLOGY

 www.ijrbat.in

STUDY OF COMPARATIVE TOXICITY OF PHYTOTOXINS FROM *LASIOSIPHON ERIOCEPHALUS* AND *TRIDEX PROCUMBENS* IN THE LARVAE OF *AEDES AEGYPTI* AND *ANOPHELES STEPHENSI*

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Communicated : 14.11.19 | Revision : 23.12.19 & 03.01.2020 Accepted : 22.01.2020 | Published: 30.01.2020

ABSTRACT:

The larvae of *Aedes aegypti* and *Anopheles stephensi* were exposed to the different concentrations such as 175, 200, 225, 250, 275 and 300 ppm of phytotoxin from the plants *Lasiosiphon eriocephalus* and *Tridex procumbens* for 2, 4, 8, 12, 24 and 48 hrs. The LC_{50} values of both phytotoxins were compared to study the comparative toxicity of the phytotoxins. The LC_{50} values of the phytotoxin from *L. eriocephalus* to the larvae of mosquito *A. aegypti* are 288.63, 283.47, 240.81, 213.07, 202.06 and 184.13 ppm where as LC50 values of the larvae of mosquito *A.stephensi* are 318.71, 240.68, 224.06, 210.14, 198.62 and 187.25 ppm respectively for 2, 4, 8, 12, 24 and 48 hrs. The LC_{50} values of the phytotoxin from *T. procumbens* are 251.79, 242.36, 230.51, 221.86, 184.13 and 151.18 ppm for the larvae of *A. aegypti* and 257.99, 240.81, 230.51, 216.65, 182.76 and 156.10 ppm for the larvae *A.stephensi* respectively for 2, 4, 8, 12, 24 and 48 hrs. The mortality in the larvae is related to the concentration of phytotoxins and exposure period. The toxicity of the phytotoxin from *T. procumbens* is comparatively higher than the toxicity of phytotoxin *L.eriocephalus* from the larvae.

Key words: - *Phytotoxin, Toxicity, L.eriocephalus, T.procumbens, A.aegypti and A. stephensi.*

INTRODUCTION:

Phytotoxin are the naturally occurring insecticides obtained from the plant resources. Actually according to Shahi *et al.,* 2010 the phytotoxins has been used from 1920 in the control of mosquitoes but after the discovery of synthetic chemicals like DDT the use of phytotoxins had been neglected. After facing the environmental crises created due to the use of synthetic chemicals the phytochemicals had been refocused and reused in the control of mosquitoes (Ghosh *et al.,* 2012).

There are about 1200 plant species having insecticidal potential (Roark, 1947) where as Sukumar *et al.,* (1991) marked 344 plant species with mosquitocidal properties.

The plants *L. eriocephalus* and *T. procumbens* are indigenous and easily available in the western Ghat. As they have insecticidal properties they are selected for this study.

From the order Diptera species *A. aegypti* and *A. stephensi* are selected for this study as they vectors for pathogens of several diseases like malaria, dengue, chicken guinea and yellow fever.

MATERIAL AND METHODS:-

Leaves of the Plant *Lasiosiphon eriocephalus* and *Tridex procumbens* used as a phytotoxin where as larvae of *A. aegypti* and *A. stephensi* (with 5 days development) are used for the experiment.

The alcoholic extracts of powder of leaves of *L. eriocephalus* had been prepared with the help of Soxhlet's apparatus and Solvent powder was evaporated with help of vacuum evaporator and will be stored in airtight desiccators.

Different concentrations of plant extracts such as 175, 200, 225, 250, 275 and 300 ppm were prepared and larvae of each species were exposed to above concentrations for 2, 4, 8, 12, 24 and 48 hrs. for calculation of LC_{50} values.

RESULTS AND DISCUSSION

The results of the present study form the basis for the comparative toxicity of both the phytotoxins. The results are also useful to calculate the LC_{50} values of each phytotoxin in relation to the specific mosquito larvae. In this study larvae of the *A. aegypti* and *A. stephensi* were exposed to the different concentrations such as 175, 200, 225, 250, 275 and 300 ppm for 2, 4, 8, 12, 24 and 48 hrs. of exposure period for the study of toxicity of the phytotoxin *L. eriocephalus* and *T. procumbens*. The calculated LC_{50} values are recorded in the Table No. 1.

The LC_{50} values of the phytotoxin from *L. eriocephalus* to the larvae of mosquito *A. aegypti* are 288.63, 283.47, 240.81, 213.07, 202.06 and 184.13 ppm where as LC50 values of the larvae of mosquito *A.stephensi* is 318.71, 240.68, 224.06, 210.14, 198.62 and 187.25 ppm respectively for 2, 4, 8, 12, 24 and 48 hrs. The LC_{50} value of the phytotoxin from *T. procumbens* are 251.79, 242.36, 230.51, 221.86, 184.13 and 151.18 ppm for the larvae of *A. aegypti* and 257.99, 240.81, 230.51, 216.65, 182.76 and 156.10 ppm respectively for 2, 4, 8, 12, 24 and 48 hrs.

The similar results were found by the Yenesew *et al.* (2003), Mohan *et al.* (2006), Rajmohan and Ramaswamy (2007), Kaushik and Saini (2008), Mgbemena (2010) and Kamaraj *et al.* (2011).

It is found that LC_{50} values of phytotoxin *L.eriocephalus* are higher in both larvae of *A. aegypti* and *A. stephensi* indicating more resistance of both larvae. Where as the LC_{50} values of *T. procumbens* are found lower in both larvae indicating low resistance of both larvae to this phytotoxin.

Hence from above discussion and the phytotoxin *T. procumbens* showed more lethal effect with less LC_{50} value indicating presence of more toxic compounds in it where as phytotoxin *L. eriocephalus* showed less effect with more LC_{50} value indicating less toxic compounds. Therefore it is indicated that phytotoxin with low LC_{50} value has higher toxic potential and phytotoxin with higher LC_{50} values has lower toxic potential.Therefore it is concluded that toxicity of plant *T. procumbens* is higher than the plant *L.eriocephalus*.

ACKNOWLEDGEMENT :

I am grateful to UGC for awarding me the 'Emeritus Fellowship' because of which I have worked on this valuable work of mosquito control. I am also thankful to the Prin. Abhayakumar Salunkhe, President of Shri Swami Vivekanand Shikshan Sanstha, Kolhapur and Prin. Dr. R. V. Shejwal, Lal Bahadur Shastri College of Arts, science and Commerce, Satara, for providing me the facilities.

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Table No. 1

LC_{50} values of phytotoxins *L. eriocephalus and T. procumbens* to the larvae of *A. aegypti* and *A.*

Mosquito larvae	Time of Exposure	LC_{50} values of phytotoxins in relation to the 4th instar mosquito larvae (ppm)	
		L. eriocephalus	*T. procumbens*
A. aegypti	2	288.63	251.79
	4	283.47	242.36
	8	240.81	230.51
	12	213.07	221.86
	24	202.06	184.13
	48	184.13	151.18
A. stephensi	2	318.71	257.99
	4	240.68	240.81
	8	224.06	230.51
	12	210.14	216.65
	24	198.62	182.76
	48	187.25	156.10