



## Insecticidal Potentialities of *Ageratum conyzoides* and *Nerium indicum* Leaves Extracts Against *Epilachna 28-punctata* (F.)

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In the present study, 1.0, 0.5, 0.2 and 0.1% petroleum ether leaves extracts of *Ageratum conyzoides* (Goat weed) and *Nerium indicum* (Pink kaner) were evaluated on the 1st instar larvae of *Epilachna 28 punctata* Fab. for its growth, larval mortality, developmental period and adult emergence. 1.0% leaves extracts of both *A. conyzoides* and *N. indicum* showed 100 and 94.44% larval mortality respectively till emergence. Whereas 0.2 and 0.1% of *A. conyzoides* extract had shown only 33.33% larval mortality and that of *N. indicum* extract exhibited only 22.22 and 16.67% mortality when compared to control (13.91%). 0.5% extract of *A. conyzoides* significantly increased the total developmental period (27.41 days) in contrast to control (22.76 days) and reduced adult emergence (33.33%). This was found to be comparatively less effective with 0.2 and 0.1% concentrations. Their  $LC_{50}$  values had also been calculated. During the development of hadda beetle diapause condition and deformed adults had also been noticed.

**Keywords:** *Epilachna 28 punctata*, *Nerium indicum*, *Ageratum conyzoides*, Leaves extracts.

### INTRODUCTION

Brinjal also known as eggplant (*Solanum melongena*) is one of the most important vegetable crops grown in India and apart. It has diversified problems of sucking, leaf feeding and borer pests at different phases of its growth. Larval as well as adult stages of brinjal hadda beetle, *Epilachna 28 punctata* (Fabr.) cause heavy damage to this crop. It had been a long dream of biologists to prevent the pest population by inhibiting their growth, moult and development. But the large scale dependence on insecticide oriented approaches as well as their successive use in controlling the hadda beetle, has resulted in several ill effects such as; environmental pollution, toxic residues on fruits, pest resistance and insecticide resistance etc. (Ghosh, 1986). Thus, in the present study, the efforts have been made to develop biocontrol schedule by using *Ageratum conyzoides* (Goat weed) and *Nerium indicum* (Pink kaner) leaves extracts to save the crop from this pest ravages.

### MATERIAL AND METHODS

The leaves of *Ageratum conyzoides* (Goat weed) and *Nerium indicum* (Pink kaner) were collected at their peak stages. These were washed, shade dried for 8-10 days and then finely ground to powder before Soxhlet extraction for 8 hrs with petroleum ether (60-80°C). From this crude extract, various concentrations viz. 0.1, 0.2, 0.5 and 1.0% were prepared for the experiments.

The nucleus culture of *Epilachna 28 punctata* (Fabr.) was obtained from the farmers field and reared in BOD incubator by maintaining the desired temperature (28±2°C) and relative humidity (65±5%). To find out the larvicidal activity, the larvae of leaf beetle were fed for 24 hrs on the brinjal leaves treated with different concentrations of these extracts and kept in plastic jars covered with muslin cloth. After 24 hrs. feeding, normal leaves were fed to them regularly upto the adult emergence. Experiments were carried out with six 1st instar larvae for each concentration and were replicated thrice.

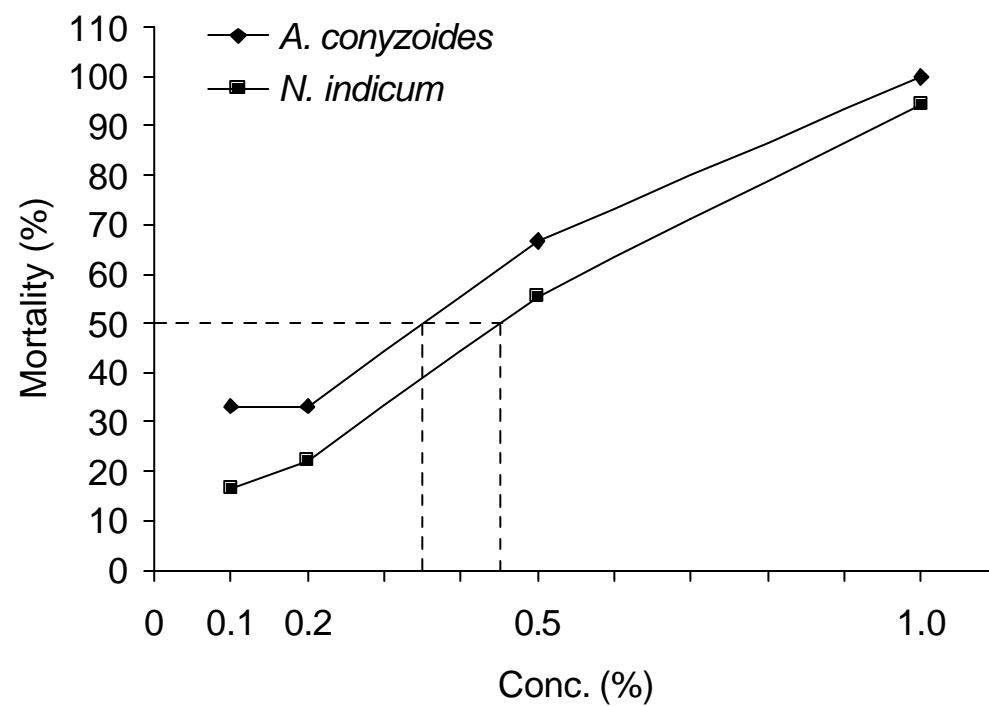
Observations were recorded on larval mortality, developmental period and adult emergence. The experiment for control had also been run simultaneously.

mortality till emergence respectively as have also been observed by Satpathi & Ghatak (1990) with 1.0% *N. oleander* leaves extract in this beetle. 33.33% larval mortality had been noticed with 0.2

**Table : Effect of *A. conyzoides* and *N. indicum* on the development of *E. 28 punctata* F.**

Leaves Extract	Conc. %	Developmental Period (in Days)					Total Dev. Period (In Days)	Adult Emergence %	Mortality %
		Ist Instar	IIInd	IIIrd	IVth	Pupa			
<i>A. conyzoides</i>	1.0	5.00	5.50	2.33	--	--	12.83	0.00	100.0
	0.5	4.33	5.00	5.33	7.0	5.75	27.41	33.33	66.67
	0.2	4.50	4.33	4.17	5.67	5.33	24.00	66.67	33.33
	0.1	4.83	4.00	4.50	5.83	4.67	23.83	66.67	33.33
	N*	4.42	4.17	4.50	5.00	4.67	22.76	86.09	13.91
<i>N. indicum</i>	1.0	5.17	4.67	2.67	2.33	2.00	16.84	05.56	94.44
	0.5	4.67	5.33	4.00	4.33	4.00	22.33	44.44	55.56
	0.2	4.50	4.83	4.83	5.50	4.17	23.83	77.78	22.22
	0.1	4.00	4.17	4.67	4.50	4.17	21.51	83.33	16.67

\*N = Control



**Fig.:** Showing LC<sub>50</sub> values of leaf extracts of *A. conyzoides* and *N. indicum* for *E. 28 punctata* F..

**RESULTS & DISCUSSION**

1.0 and 0.5% leaves extracts of *A. conyzoides* caused 100.00 and 66.67% and *N. indicum* caused 94.44 and 55.56% larval

and 0.1% extracts of *A. conyzoides*, whereas with *N. indicum* it was found to be 22.22 and 16.67% respectively over control (13.91%). Workers like Singh & Rao (2000) have noticed 35.15%

mortality in *Spodoptera litura* with 716.8µg dose of *A. conyzoides* leaf extract which is very close (33.33%) to the present findings with 0.2 and 0.1% concentrations of the same extract. It indicated that the lower concentrations of *N. indicum* had less effect on larval mortality of hadda beetle. It had also been observed that the larval mortality occurred mainly at I<sup>st</sup> and II<sup>nd</sup> instar stages of *E. 28 punctata*. Bai & Koshy (1999) described antifeedant and insecticidal properties of yellow kaner (*Thevetia nerifolia*) against *H. 28 punctata*, whereas Patil *et al.* (2000) found *N. indicum* to possess antifeedant property against *Callosobruchus chinensis*.

0.5 percent *A. conyzoides* leaves extract exhibited significant effect on total developmental period of hadda beetle showing 27.41 days as compared to control (22.76 days), whereas no significant variation in this period had been observed with 0.2 and 0.1% extracts as it showed 24.0 and 23.83 days respectively. In contrast to the present finding (12.83 days), Mehta *et al.* (1999) reported that 1.0% leaf extract of *A. haustonianum* increased the total developmental period (21.0 days) of hadda beetle as compared to control (20.60 days).

1.0% leaf extract of *N. indicum* had shown the reduction in total developmental period upto 16.84 days, while its other concentrations (0.2 & 0.1%) did not show any remarkable alteration in this period of *E. 28 punctata*. Significant prolongation in IV<sup>th</sup> instar larval period had been observed to be 7.0 days with 0.5% conc. of *A. conyzoides* as compared to control (5.00 days).

The percent adult emergence caused by *A. conyzoides* leaf extract ranged from 33.33 to 66.67% while in case of *N. indicum* it ranged from 5.56 to 83.33%. Both conc. 0.2 and 0.1% of *A. conyzoides* exhibited only 66.67% adult

emergence. In case of *Nerium* extract the maximum inhibition of adult emergence (5.56%) was noticed with 1.0% conc. as compared to control (86.09%). The extract of *A. conyzoides* was reported to possess juvenile hormone activity against *Dysdercus cingulatus* (Fab.) leading to the malformed adults (Srivastava *et al.*, 1985).

The LC<sub>50</sub> values of *A. conyzoides* and *N. indicum* for hadda beetle till emergence were calculated as 0.35 and 0.45% respectively indicating that *A. conyzoides* has better insecticidal property than *N. indicum* against *E. 28 punctata* larvae.

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