Asian J. of Bio Sci. (2007) Vol. 2 No. 2 : (92-95)

Relative toxicity of abamectin 1.9 EC to egg parasitoid, *Trichogramma chilonis* Ishii and egg larval parasitoid, *Chelonus blackburni* (Cam.)

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(Accepted : August, 2007)

Laboratory experiments were conducted to assess the safety of Abamectin 1.9 EC along with spinosad, cypermethrin and endosulfan to the egg parasitoid, *Trichograma chilonis* Ishii and the egg larval parasitoid, *Chelonus blackburni* (Cam.). The results revealed that abamectin 1.9 EC at all the doses tested had lesser adverse effect on the emergence of the *Trichogramma* adults compared to cypermethrin and endosulfan and also to its parasitisation potential. Similarly, abamectin at all concentrations caused lower mortality of *C. blackburni* compared to cypermethrin and endosulfan. The highest dose of abamectin tested recorded only 6.7 per cent adult mortality at 12 h after treatment (HAT). After 24 h of exposure, the mortality rate progressively increased in abamectin treatments. But endosulfan and cypermethrin at 420g and 70g a.i ha^{-1} registered the highest mortality of 53.3 and 76.7 per cent, respectively even at 6 HAT. The same trend was also noticed in adult emergence.

Key words: Abamectin, *Chelonus blackburni,* Insecticides, *Trichogramma chilonis.*

INTRODUCTION

Trichogramma chilonis Ishii is a potential egg parasitoid of major lepidopteran pests and is being widely used as a component of BIPM especially in cotton eco system. It can be mass cultured in the laboratory and used for both inoculative and inundative releases (Gahukar, 1997). Like wise, *Chelonus blackburni* (Cam.) is an important egg larval parasitoid of cotton bollworms. Many insecticides used to control various insect pests in the field, are found to be highly toxic to *T. chilonis* (Ciociola *et al.*, 1999; Tiwari and Khan, 2002) and to *C. blackburni* (Rechav, 1974; Manisegarane and Kumarasamy, 1988). So safety evaluation of a chemical to important natural enemies is as important as that of toxicity evaluation before wide spread usage of that chemical. Abamectin is a broad spectrum insecticide derived from soil actinomycetes, *Streptomyces avermitilis* Burg., used widely for the management of almost all the crop pests (Lasota and Dybas,1991).

MATERIALS AND METHODS

Experiments were conducted to test the toxicity of abamectin on parasitoids in Tamil Nadu Agricultural University during 2005. The experiment is done in completely randomized design with ten treatments and replicated four times. The treatments were abamectin 1.9 EC at 9, 11, 13, 15, 18.5 and 22.5g a.i ha^{-1}, spinosad 45 SC at 75g a.i ha^{-1}, cypermethrin 10 EC at 70g a.i ha^{-1}, endosulfan 35 EC at 420g a.i ha^{-1} and untreated check. The different treatment doses were obtained by dissolving 1.0, 1.2, 1.4, 1.6, 2.0 and 2.4ml of abamectin 1.9 EC and 0.3ml of spinosad 45 SC, 1.5 ml of cypermethrin 10 EC and 2.4 ml of endosulfan 35 EC in one litre of distilled water and used for the safety tests. The mortality were recorded and corrected for the mortality in the control treatment wherever necessary and analysed in CRD in Irristat for ANOVA.

Trichogramma chilonis:

The egg parasitoid, *T. chilonis* was mass cultured in the Biocontrol Laboratory on the eggs of rice moth, *Corcyra cephalonica* (Stainton) as per the method described by Prabhu (1991). Fresh *C. cephalonica* eggs collected in early morning were sterilized under UV radiation of 15 W capacity for 20 min at a distance of 15 cm to avoid the emergence of *C. cephalonica* larvae. These eggs were pasted on paper cards of 20 x 30 cm size having thirty, 7 x 2 cm rectangles. These egg cards were placed in polythene bags along with nucleus card at 6:1 ratio for parasitization.

The parasitized egg cards were cut into one cm^2 bits and three days old hundred per cent parasitized eggs were sprayed with insecticides at different concentrations mentioned above, using an atomizer. For untreated check, only distilled water was sprayed. The treated egg cards were shade dried for 10 min and then kept in a test tube of 10 x 1.5 cm size. The number of parasitoids that

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