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Research Note :

Toxicity of Methoxy fenocide20F against rice leaffolder *Cnaphalocrocis medinalis* (Guenee)

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Chemical insecticides have been the backbone of insect pest control since the early 1950's when organochlorine insecticides were first widely introduced. Indiscriminate use of the chemical insecticides which are active against a broad spectrum of insects led to many ecological problems. Chemicals are to be used judiciously which serve as a major tool in pest management. Currently a new group of chemical compounds are being tested against lepidopteran pests. These are called moult accelerating compound (MAC) (Santharam and Kumar, 1998). Methoxyfenocide 20F (N-tert-butyl-N'-(3, 5-xylohydrazide) is the newest diacylhydrazine insecticide introduced to reach the market place. It is a molt accelerating compound and provides effective control of a wide range of key lepidopterans insects. It binds with very high affinity to the ecdysone receptor complex in lepidopteran insects, where it functions as a potent agonist, or mimic, of the insect molting hormone, 20-hydroxy ecdysone (20E). The chemical upon absorption into the haemolymph of the insect, binds to the ecdysone receptor which initiates the moulting process. As the normal process disrupted, the insects prevented from shedding its old cuticle. The larvae die of dehydration and starvation within 2-5 days. In view of the increasing demand for safer and environmentally compatible insecticides for the control insect pests, the toxicity tests were conducted for rice leaffolder, *Cnaphalocrocis medinalis* to fix the LD_{50}.

Paddy plants were raised in the pots and the leaves were taken, washed thoroughly in running tap water. These leaves were dipped in insecticide (RH-2485; Methoxyfenocide) solution with teepol for about 30 secs and excess fluid was removed by jerking uniformly thrice. Starved fourth instar larvae from laboratory culture were allowed to feed on the treated leaves for 24hrs and then transferred to fresh leave kept in plastic cups Mortality counts were taken after 24hrs for 5 days. Log-Dose probit mortality was determined by probit analysis setting confidence limits at 95 per cent (Reghupathy and Dhamu, 1990).

The LC_{50} of molt accelerating hormone Methoxyfenocide was 3.16 ppm for fourth instar larvae of *Cnaphalocrocis medinalis* while the upper and lower fiducial limits was 5.69 and 1.75, respectively. It was found that the leaffolder larvae were found to be more susceptible with lesser LC_{50} values (Table1).

Carlson *et al*. (2000) stated that methoxyfenozide exhibits high insecticidal efficacy against a wide range of important caterpillar pests, including many members of the family Pyralidae, Pieridae, Tortricidae and Noctuidae. It is most effective when ingested by the target caterpillar, but it also has some topical and ovicidal properties. It is modestly root systemic, but not significantly leaf-systemic.

Murray *et al*. (2005) reprted that methoxyfenozide was slower acting than other products tested, but demonstrated potential for *Helicoverpa armigera*.

Pineda *et al*. (2007) reported that the to LC_{50} values, no significant differences were observed between the

Table 1 : LD 50 value of Methoxy fenocide20F (RH- 2485) against rice leaffolder *Cnaphalocrocis medinalis* (Guenee)

Pesticide	LD_{50} (ppm)	95% fiducial limits		y=a+bx	Chi^2 at P=0.05
		UL	LL		
Molt Accelerating hormone Methoxyfenocide 20F (RH-2485)	3.16	5.69	1.75	Y= 4.18+1.62x	0.064

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same age leaf residues of different application methods at 96 and 72 h after ingestion treatment on neonates and fourth instars, respectively. Nevertheless, toxicity of methoxyfenozide decreased significantly after time. It was concluded that the combination of lethal and sublethal effects of methoxy-fenozide and spinosad might exhibit significant effects on the population dynamics of *S. littoralis*.

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