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EFFICACY OF DIOFENOLAN AT VARIOUS CONCENTRATION OF BIOMASS ACCUMULATION IN LARVAL PERIOD AGAINST BLACK HAIRY CATERPILLAR

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ABSTRACT

The black hairy caterpillar treated orally with different concentrations of the diofenolan the larval biomass on 5th day, in response to the parents' treatment orally with different effective concentration (0.0001% to 1%) of the deiofenolan, varied from 1.86 to 4.25 mg. decreasing with the increasing concentration. The larval biomass on 10th day, showing a tendency towards decrease with the advancing concentrations, varied from 7.92 to 16.14 mg. it differed with the concentration of the diofenolan (P<.01).

KEYWORDS: black hairy caterpillar, diofenolan, larval.

INTRODUCTION

The insect growth regulator, a fourth generation insecticide, accidents came in the existence in the Laboratory of Philips, Duphar. The Netherlands, while preparing the herbicides. *First insect growth regular synthesized, was diflubenzuron,* Which belong Benzoyl phenyl urea group. Later, different groups of insect growth regulator having chitin biosynthesis inhibiting property, were identified. The different groups of insect growth regulators, through differ in their chemical structure and mode of action, but have a common characteristics i.e., they exhibit lethal action in juve nile stage and sterility in sexually mature adults, thus the pest population declines very rapidly. Besides, they also inhibit the food consumption and growth of individuals, which survive sublethal treatments. This becomes an additional benefit in the field of pest management as surviving pest will consume less food, causing least injury to agro-ecosystem. The suppression of pest population by the use of insect growth regulators has already been achived by many workers. **Flint** et. al., 1978.

MATERIAL & METHOD

In Pupal dip Method pupae were dipped in a particular concentration for 2 minutes. After dipping for the fixed duration the pupae were taken out from that concentration of the insect growth regulator. The solvent and the insecticides adhering to the surface of the pupae were soaked in the blotting paper and such treated pupae were maintained for further studies. This method form henceforth will be referred as PDM in the text.

In Residue Film method of treatment 1 to 2 hr old adults were exposed to a thin file of residue of a concentration of particular insect growth regulator. For obtaining the thin film of the chemical as residue, about 10 ml of a concentration of a chemical was poured in a petridish (10 cm dia) and the petridish was tilted in different ways to spread the chemical on the whole floor area of the petridish and its raised periphery. Thereafter, the petridish was kept in the air for the evaporation of the solvent. This led to the formation of a thin film of a concentration of insect growth regulator in the petridish as residue. Adults were left in petridishes having thin film of the insect growth regulator for 24 hours. The petridishes were covered by thin muslin cloth to prevent the escape of the adults. Such treated adults were employed in the different experiments as described later on. This method of treatment will be designed as RFM in the text from here onwards. In Adults feeding Method of treatment a concentration of a particular insect growth regulator was mixed in 10 per cent sugar solution which was supplied to adults for feeding. From here onwards this method of treatment will be referred as AFM in the text (Abbott W.S. 1925).

RESULT & DISCUSSION

The larva of the adults treated orally with different concentrations of the diofenolan, except 0.0001 per cent had lesser biomass on the 5th day as compared to that of the untreated adults. The larval biomass on this day, in response to the parents's treatment orally with different effective concentration (0.0001% to 1%) of the deiofenolan, varied from 1.86 to 4.25 mg. decreasing with the increasing concentration. However 0.001% and 0.01% concentration behaved alike in effecting the larval biomass, producing heavier larva as compared the higher concentrations which caused distinct difference between biomasses (P<.01).

On the 10th day, the larva of the adults treated orally with any concentration of the diofenolan was considerably lighter than that of the untreated parents (P<.01). In response to parents treatment with different concentrations of this insect growth regular. The larval biomass on this day, showing a tendency towards decrease with the advancing concentrations, varied from 7.92 to 16.14 mg and it depended on the concentration of the fourth generation insecticide.

Like the 10th day, on the 15th day also, each concentration of the diofenolan under adults feeding method reduced the larval biomass as compared the non-treatment situation (P<.01). As regards the effect of the different concentrations of this insect growth regulator the larval biomass on this day, tending to decrease with the advancing concentration, varied from 29.63 to 76.83 mg and, as per analysis of variance, it differed with the concentration of the diofenolan (P<.01). (Table-1) The Similar result was found Abbott. W.S. (1925), AYDIN H;, GURKAN M.O. (2006);, ABD El –MAGEED A.E.M. (2008); CORBEL V.CHANDRE et. al. (2003); CORBEL V.STANKIEWICZ (2006); EL- ASWAD A.E. (2007): Flint, et. al.

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(1978), Kim SI, et. al. (2010), Li SQ, et. al. (2005), MARTIN et. al. (2003): MUSHTAQ A. (2004), Parugrug ML, Roxas AC (2008) and SWELM E.S. SAYED M.A. (2006):, also recorded.

Table 1.Effect of different concentration of Diofenolan under different modes of treatment on biomass accumulation in larvae of black hairy caterpillar (Values are mean I.S.E.)

Mode of treatment	Concentration (%)	Larval biomass (mg)+ S.E. on		
		5th Day	10th Day	15th Day
Adult Feeding Method (AFM)	.0001	4.250.12	16.140.21	76.820.40
	.001	3.33 0.14	14.16 0.10	65.94 0.50
	.01	3.14 0.13	12.52 0.24	54.64 0.72
	.10	2.62 0.11	10.43 0.25	45.44 0.64
	.50	2.34 0.02	9.54 0.23	35.22 0.46
	1.00	1.86 0.14	7.92 0.12	29.63 0.78

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