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EFFECT OF DIFFERENT DOSE OF BUPROFEZIN UNDER DIFFERENT MODE OF TREATMENT ON BIOMASS ACCUMULATION IN LARVAL OF *PERICALLIA RICINI* FAB

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ABSTRACT

On the 15th day, the larva not treated earlier at adult stage, had more weight (110.94mg) than that of the larva obtained from adults treated only with any of the concentration of the buprofezin (P<0.01). Under this method of treatment, the larval biomass varied from 21.02 to 72.14 mg among different concentration of the insect growth regulator and it was reduced with the increasing strength of the insect growth regulator. The analysis of variance showed that it was affected by the strength of the insect growth regulator (P<0.01).

KEYWORDS: Insect, Growth Regulator, Larval, Biomass.

INTRODUCTION

First insect growth regular synthesized, was diflubenzuron, which belong Benzoyl phenyl urea group. Later, different groups of insect growth regulars 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 juvenile 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 achieved by many works. 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 10ml 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.

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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 to 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 AND DISCUSSION

The 5th day larva, not treated earlier at adult stage orally, obtained more biomass (4.32mg) than that obtained in response to treatment earlier at the adult stage orally with any concentration of the buprofezin (P<0.05%). It varied from 1.76 to 3.85 mg among different concentrations of the buprofezin tending to decline with rise in the concentration of the insect growth regulator. But the statistical test showed that 0.001, 0.01 and per cent concentration had similar effect on the larval biomass and like-wise 0.50 and 1.00 per cent concentrations also affected the larval biomass on the 5th day identically caused considerable reduction in the larval biomass as compared to any of the 0.001, 0.01 and 0.10 per cent concentration of chemical (P<0.05). On the 10th day, larvae of treated adults earlier orally with any of the employed concentration of the buprofezin caused reduction in acquiring the weight (P<0.05). In response to earlier oral treatment of its adults with the buprofezin, the larval biomass varied from 6.84 to 15.75mg among different concentrations decreasing with increase in the concentration and it differed with the strength of the insect growth regulator (Anova; P<0.05). On the 15th day, the larva not treated earlier at adult stage, had more weight (110.94mg) than that of the larva obtained from adults treated only with any of the concentration of the buprofezin (P<0.01). Under this method of treatment, the larval biomass varied from 21.02 to 72.14 mg among different concentration of the insect growth regulator and it was reduced with the increasing strength of the insect growth regulator. The analysis of variance showed that it was affected by the strength of the insect growth regulator (P<0.01) (Table-1). The similar result was found Aydin H and Gurkan M.O. (2006) The efficacy of spinosad on different strains of *Spodoptera littoralis* (Boisduval) (Lepidoptera; Noctuidae), ABD El–MAGEED *et. al.* (2008), Corbel V. *et. al.* (2003), Corbel *et. al.* (2006) Synergism between insecticides permiethirn and propoxur occurs through activation of presynaptic muscarinic negative feedback of acetylcholine relase in the insect central nervous system, EL-ASWAD A.E. (2007), Flint, H.M.; (1978), Khan, H.A., *et. al.* (2013) Insecticide mixtures could enhance the toxicity of insecticides in a resistant dairy population of *Musca domestica* L., Li SQ, *et. al.* (2005), Mathiyazhagan, N., & Natarajan, D. (2013), Martin T. *et. al.* (2003), Mushtaq A. (2004), Parugrug ML and Roxas AC (2008), Rozpara E (2016), Swelm E.S. and Sayed M.A. (2006), Sarwar M and Salman M (2015), Senthil-Nathan S (2015), Shahab-Ghayoor H and Saeidi K (2015), Szolyga B, *et. al.* (2014), Tabari MA, *et. al.* (2015) and Tak JH, *et. al.* (2016) also recorded.

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Table-1.Effect of different concentrations of Buprofezin under different modes of treatment on biomass accumulation in larvae of *Pericallia ricini* Fab. (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)		Value	S.E.	Value	S.E.	Value	S.E.
	.0001	3.85	0.12	15.75	0.36	72.14	0.38
	.001	2.94	0.13	13.84	0.22	56.86	0.72
	.01	2.75	0.16	11.56	0.42	49.35	0.62
	.10	2.66	0.14	10.36	0.24	38.30	0.56
	.50	1.98	0.02	8.96	0.23	29.94	0.68
	1.00	1.76	0.14	6.84	0.35	21.02	0.22

Fig. In Parentheses and Transformed value.

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