EFFECT OF PHYTOCHEMICAL AZADIRACHTIN O THE MRPHOLOGY AND CYTOLOGY OF THE TESTIS FOLLICLE OF THE INDIAN GRASSHOPPER, *MELANOPLUS SANGUINPES*

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ABSTRACT

In the present investigation, the azadirachtin 25ppmtreated animals were studied to determine effect of phytochemical, on the length and the width of follicle of the testis and cytological changes .It was found that there was significant reduction in the length and the width of follicle by 0.30 (0.9mm). There were noteworthy alterations in the cytology of apical part, transformation zone, maturation zone and terminal zone of *Melanoplus Sanguinpes* cells as well as reduction in cell size in the apical part, disintegration of testicular epithelium and degeneration of spermatids in the transformation zone, disintegration of epithelial layer in maturation zone and disintegration of sperm bundles in the terminal zone of sperm follicle of Indian Grasshopper, *Melanoplus sanguinipes*.

Key Words: Azadirachtin, testis follicles, length and width, disintegration and degeneration in cells.

INTRODUCTION

In vidarbha, Indian Grasshopner, *M. Sanguinpes* found to be acted as one of the major crop pests. There is no. of areas that have high damage of crop due to grasshoppers. Unlike chemical control, Cultural controls methods are extensively have been used by farmers, which include seeding of crop, crop rotation, tillage, trap strips and early harvest. In spite of using this entire method grasshopper, *M. Saguinpes* was found to be Prevalent. Less expensive method of using neem leaves for the control of the crop has widely been used in this region. In the present investigation attempts were made to Investigate the effect of phytochemical, Azadirachtin on the reproductive organs of the *M. Sanguinpes*. Literature cited has indicated that A. Ranman *et al.,* (2004), Schimizu (1988) and Sieber and Rembold (1983) studied the effect of neem leaves and azadirachtin on reproductive organs of grasshopper

MATERIALS AND METHODS

To study the effect of azadirachtin on the length and width of sperm tube or testes follicle newly emerged males from eggs of 15 days acclimatized females were tropically treated with azadirachtin 10ul of 25 ppm concentration. Treated males were dissected after 12 days and the length and the width of sperm tubes measured by using micrometry. The measurement was taken in 7 replicates each of four insects each.

Some of the male nymphs were treated with 4 doses - 25 ppm, 50 ppm, 100ppm & 200 ppm and examined after 10 days of azadiractin application. The controls were treated with acetone.

Testes follicle of treated (experimental) and controlled animals were passed through a series of microtechniques & using Ehrlich haematoxylene and Eosin, section of 7 to 8 micron thickness were obtained.

RESULTS AND DISCUSSION

Azadirachtin treated (experimental) and acetone treated males (Control) nymphs when dissected and comparable morphometry was done it was found that there was considerable reduction in the lengths [2.61(1.42mm)] and width [0.30 (10.9) mm)] of the experimental animals. The proper growth of reproductive organs takes place due to proper secretion of the hormone. The azadirachtin might be responsible for the scanty secretion of the hormones in the grasshoppers. This statement is consistent with the investigation made by Engelmann (1970) & Karnavar (1987) who investigated that azadirachtin and neem extract regulate the reproductive functions of insects through their endocrine system. He also investigated that morphogenesis was adversely affected by arzcirachtin. The present investigation is also consistent with the investigation made by Sieber and Rembold (1983) in *Locusta migratoria* wherein it was investigated that modification and suppression of the ecdysteroid titre by azadirachtin is closely correlated with morphogenic effect. Present findings are also consistent with the investigation made by Pener and Shalom (1987) in locust.

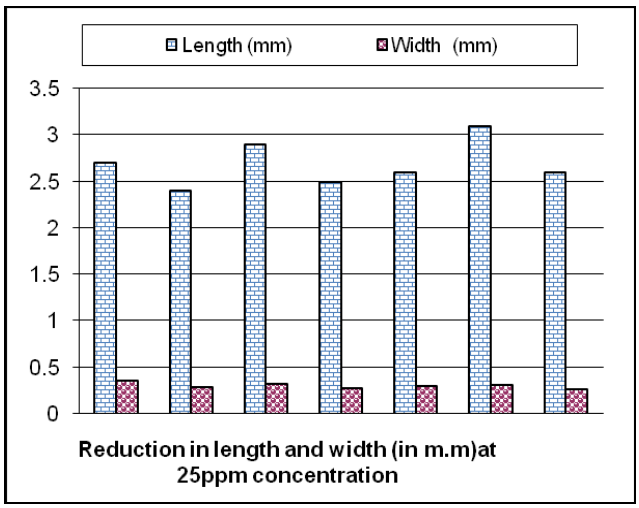
Table 1: Effect of azadirachtin 25ppm on the morphology of the testis follicle of the male nymph of Indan grasshopper, *Melanoplus sanguinipes*.

Application of azardiractin of 25ppm.	Length of testis follicle	Width of testis follicle
1	2.7 (± 0.6) mm	0.36 (± 0.11) mm
2	2.4(± 0.5)mm	0.29 (± 0.9)mm
3	2.9 (± 0.3)mm	0.32 (± 0.13)mm
4	2.5 (± 0.6)mm	0.28 (± 0.8) mm
5	2.6 (± 0.4)mm	0.30 (± 0.90mm
6	3.1 (± 0.2)mm	0.31 (± 0.7) mm
7	2.6 (± 0.4) mm	0.27 (± 0.9) mm

Table 2: Cytological changes in the various region of testis follicle of male nymphs of Indian grasshopper, *Melanoplus sanguinipes.*

Sr.No.	Apical part of testis follicle	Transformation zone of testis follicle	Maturation zone of testis follicle	Terminal zone of testis follicle
1	Destuction of cells	Disintegration of testicular epithelium	Disintegration of epithelian layer	Disintegration of sperm bundles
2	Reduction in cell size	Degeneration of spermatids		Reduction in sperm number

Fig 1: Effect of Azadirachtin on testis of *Melanoplus Sanguinpes*



Cytological investigation of the testis follicle of the azadirachtin treated male nymphs (experimented) acetone treated male nymphs (control) reveled that there was noteworthy destruction of cells and reduction in cell size in the apical part of testis follicle. There was found a disintegration of testicular epithelium and degeneration of spermatids in transformation zone, disintegration of epithelial layer in maturation zone and disintegration of sperm bundles and reduction in their number in terminal zone. The present investigation is consistent with findings made by Street (1976) in *Leptionarsa decemlioneata* who found that adult beetles for a period of 5 days on potato plants sprayed with the extract of a concentration of 10 ppm caused a decrease of reproduction more than 98%. Disintegration, degeneration and reduction in cell number due to azadirachtin in the present investigation got the momentous support of investigation made by Linton and et al (1997) in Schistocerca gregara (Forskal) who revealed that treated animals were suffered from arrested spermatogenic meiosis at metaphase.

Degeneration of sperm bundles in the terminal zone in the present investigation is consistent with the work of Schulz and Schitler (1983) in *Epilichna varivestis* where in the degeneration of sperm bundles without sperm formation has been reported. The present investigation is also consistent with Abdel Rahman (2004) in the *Pectinophora gossypiella* and Schimizu (1988) in *Mamestra brassicae.*

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