

Influence of Farnesol on Growth and Development of *Dysdercus koenigii*

Authors : Shailendra Kumar, Kamal Kumar Gupta

Abstract : *Dysdercus koenigii* is an economically important pest of cotton worldwide. The pest damages the crop by sucking sap, staining lint, reducing the oil content of the seeds and deteriorating the quality of cotton. Plant possesses a plethora of secondary metabolites which are used as defense mechanism against herbivores. One of the important categories of such chemicals is insect growth regulators and the intermediates in their biosynthesis. Farnesol belongs to sesquiterpenoid. It is an intermediate in Juvenile hormone biosynthetic pathway in insects has been widely reported in the variety of plants. This chemical can disrupt the normal metabolic function and therefore, affects various life processes of the insects. Present study tested the efficacy of farnesol against *Dysdercus koenigii*. 2µl of 5% (100µg) and 10% (200µg) of the farnesol was applied topically on the dorsum of thoracic region of the newly emerged fifth instar nymphs of *Dysdercus*. The treated insects were observed daily for their survival, weight gain, and developmental anomalies for a period of ten days. The results indicated that treatment with 200µg farnesol decreased survival of the insects to 70% after 24h of exposure. At lower doses, no significant decrease in the survival was observed. However, the surviving nymphs showed alteration in growth, development, and metamorphosis. The weight gain in the treated nymphs showed deviation from control. The treated nymphs showed an increase in mortality during subsequent days and increase in the nymphal duration. The number of nymphs undergoing metamorphosis decreased to 46% and 88% in the treatments with the dose of 200µg and 100µg respectively. Severe developmental anomalies were also observed in the treated nymphs. The treated nymphs moulted into supernumerary nymphs, adultoids, adults with exuviae attached and adults with wing deformities. On treatment with 200µg; 26% adultoid, 4% adults with exuviae attached and 12% adults with wing deformed were produced. Treatment with 100µg resulted in production of 34% adultoid, 26% adults with deformed wing and 4% adults with exuviae attached. Many of the treated nymphs did not metamorphose into adults, remained in nymphal stage and died. Our results indicated potential application plant-derived secondary metabolites like farnesol in the management of *Dysdercus* population.

Keywords : development, *Dysdercus koenigii*, farnesol, survival

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