

Bioefficacy of *Catharanthus roseus* on Reproductive Performance of Red Cotton Bug, *Dysdercus koenigii* (Heteroptera: Pyrrhocoridae)

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Abstract : Influence of hexane extract of *Catharanthus roseus* leaves on reproductive fitness of *Dysdercus koenigii* was investigated by evaluating mating behaviour, oviposition behaviour and fertility of the treated insects. The volatiles of the plants were extracted in hexane by 'cold extraction method'. The insects were treated with the extracts by 'dry film residual method'. Our studies indicated that the treated male showed altered courtship behaviour, less number of mounting attempts, took more time to mate, less percent successful mating, and more disrupted mating. Similarly, the treated female exhibited either mating refusal or neutral behaviour towards courting males. The maximum disruption in the mating was observed in a cross T♂ X T♀, where males and females were treated with *Catharanthus* extract. The *Dysdercus* treated with *Catharanthus* extracts also showed marked reduction in their reproductive success. The treated females laid lesser number of egg batches and eggs in their life span. *Catharanthus* extract was effective in alteration of the oviposition behaviour. The eggs laid by the mated females were fertile indicating insemination of the mated females. However, the percent hatchability of the eggs laid by the treated females was less than control. The GC-MS analysis of the extract revealed the presence of juvenile hormone mimics, and the intermediates of juvenile hormone biosynthesis. Therefore, some of these compounds individually or synergistically alter reproductive behaviour of *Dysdercus*.

Keywords : *Catharanthus roseus*, *Dysdercus koenigii*, GC-MS analysis, reproductive performance

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