CHAPTER-8

Summary
Present investigation was done on the topic entitled, "Biochemical profile in the gonads and haemolymph of *Dysdercus similis* induced by some natural plant products".

For the present investigation *Dysdercus similis* (Freeman), was selected as an experimental insect. It is a serous pest on the plants of family-Malvaceae and damage a lot to the cash crop cotton and decline the economy of the developing country like India.

So to control the fecundity and viability the nymphs and adults insects were treated with natural plant products extracted from the seeds of *Delonix regia* (Family-Leguminaceae) and *Datura alba* (Family-Solanaceae) by Soxhlet method (adopted after Sharma, 1988).

Experiments were carried out in *Dysdercus similis* on the following aspects.

1. 1% stock solutions were prepared in distilled water separately and further dilutions were made to calculate the percentage mortality and determination of LC\(_{100}\), LC\(_{50}\), LC\(_0\) and sublethal concentration and summarized in table 1-12 and graphs No. 1-12.

2. **Life cycle of *Dysdercus similis***

   Life cycle of *Dysdercus similis* (Freeman) was exhibited in photograph No. 7 and summarized in chapter IV.

3. **KD toxicity for 1\(^{st}\) to 5\(^{th}\) nymphal instar stages of *Dysdercus similis* (Freeman).**
KD toxicity was recorded and summarized in graph 13-22 and table 13-22 in chapter V.

(4) **Studies on the ‘GSI’ in *Dysdercus similis* (Freeman).**

GSI is a significant aspect of this research investigation concerning with the fertility rate of the corresponding groups of nymphs or insects.

The deviation in increase or decrease in GSI in comparison to control was related with efficiency of gonad (if increase in GSI) or related with the malformation (in case of decrease in GSI) of gonadal tissue as summarized in table 23-34.

(5) **Electrophoresis method**

- Detection of +vely and –vely charged protein and lipoprotein fractions in the haemolymph of control and experimental groups of 2nd to 5th nymphal instars and adults of *Dysdercus similis* (Freeman) was done and results are summarized in electrophoretogram No. 1-48.

- Detection of +vely and –vely charged protein and lipoprotein fraction in the gonads of control and experimental groups of *Dysdercus similis* (Freeman) was done and the results are summarized in electrophoretogram No. 49-64.
Original Finding:

(1) The present investigation was conducted on the effect of plant products extracted from the seeds of Delonix regia and Dhatura alba respectively on the haemolymph and gonads of Dysdercus similis (Freeman) (a serious pest of family - Malvaceae).

(2) The total nymphal period was about 28-30 day in normal insects of Dysdercus similis (Freeman) but high percentage of mortality was observed in nymphal instars development after Dhatura alba seed extract treatment and no oviposition was observed in Delonix regia seed extract treated groups.

(3) In comparing the KD (Knock Down) value of Delonix regia and Dhatura alba seed extracts, it was observed that Delonix regia seed extract was more toxic and showed nymphicidal action than Dhatura alba seed extract.

(4) GSI (Gonado Somatic Index) in nymphs and adult insects showed gradual decrease after treatment of Delonix regia and Dhatura alba seed extracts. Ovarian and testicular weight was gradually decreased which dependent on the dose and duration of treatment of the antifertility agents.

(5) The Delonix regia seed extract treatment exhibited decrease in GSI in male and female nymphs and adult insects as evident in tables No. 23, 24, 27, 28, 31 and 32.
(6) The depletion in the number and in density of protein and lipoprotein +vely and –vely charged fractions in the gonads and haemolymph of *Dysdercus similis* was recorded and summarized in electrophoretogram No. 1 to 64 by paper electrophoresis due to the intoxication of plant products extracted from the seeds of *Delonix regia* and *Dhatura alba*.

**Conclusion:**

It could be concluded from the present investigation that the plant products (extracted from the seeds of *Delonix regia* and *Dhatura alba*) are act as potent growth inhibitors and hampering the process of ecdysis as high mortality was observed in nymphs at the time of moulting.

The decline in GSI could be correlated with qualitative and quantitative depletion of protein and lipoprotein metabolites in the haemolymph and gonads of the treated groups is responsible for the production of large number of immature pathological oocytes which did not attain such maturity which is required for egg laying. So no egg laying was observed in *Delonix regia* treated insects confirm the antiovipositional activity of this extract.

**Significance:**

The +vely and –vely charged protein and lipoprotein fractions in the gonads and haemolymph of *Dysdercus similis* (Freeman) was
correlated with decline in the rate of fecundity as observed in experimental groups.

The increase in GSI indicating the hyperactivity of gonads while decrease in GSI indicated poor development or development arrest or malformation of gametes resulted into disfunctioning or inactiveness of gonads of the treated groups.

Decrease in GSI also correlated with antiovipositional activity due to Delonix regia and Dhatura alba seed extract intoxication because most of the oocytes never attain such maturity which is required for oviposition. So, in this way it could be possible to control the population density of pest insect Dysdercus similis by plant products having insecticidal and antiovipositional properties.