Esterase positive interstitial cells were found in the ovary of the sparrow. Such types of cells have been reported in the ovary of *Bufo stomaticus*, *Rana pipiens* and *Rana cyanophlyctis*[9,10]. The neutral lipids have been studied in the ovary of sparrow[11] and non-specific esterases at the same locus play an important role in the breakdown of neutral lipids such as triglycerides or cholesterol which are supposed to be steroid precursors[3].

Thus, the present histochemical investigations demonstrate the steroidogenic site of sparrow ovary and the presence of non-specific esterases in different parts of the sparrow ovary. Lysosomal esterases have been implicated in ovum activation, nutrition and in lysosomal-mediated degeneration of atretic follicles[12,13].

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PHYTOSTERILANTS TO CONTROL THE COTTON BUG, *DYSDERCUS CINGULATUS* F.

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INSECTS and plants have undergone constant interaction for millions of years and many plants have developed a number of defensive chemicals. A large number of plant species contain natural bioactive materials which could be used as toxicants, repellents, precocenes, antifeedants, juvenile hormone mimics and sterilants to combat insect attacks. The advantage with these materials is that their use does not appear to result in the emergence of resistant insect strains to the same degree as with synthetic insecticides. Secondly, these natural compounds can form the basis for development of new pesticides if their structure-activity relationships are understood.

Several plant derivatives and crude extracts are reported to be active as sterilants against many insects[1]. Reserpine[2], Ursenyl palmitate[3], leaf and root alkaloids of *Catharanthus roseus*[4], Azadirachtin[5] and leaf alkaloids of *Adathoda vasica*[6] have been shown to possess significant bioactivity.

Bougainvillea (Nyctaginaceae) is a common ornamental garden plant which is never attacked by insect pests. It is probable that the plant has some built-in chemical defences to ward off insect attacks. Srivastava *et al*[7] found that the stem extracts of the plant exhibited juvenile hormone activity against certain insects. It was interesting to know whether the leaf extracts also possess any bioactivity which could be utilized against insect pests. Another natural product of interest was the seed extracts of *Abrus precatorius* Linn. (Papillionaceae). The seeds of this plant are reported to interfere with the ovulation of the human female[8]. It could possibly display significant reproductive inhibition against insects. These two plants products were therefore selected for detailed study against the red cotton bug, *Dysdercus cingulatus* Fabr. (Hemiptera: Pyrrohocoridae).

Bougainvillea leaves were shade-dried and three types of extracts were made in three different solvents: petroleum ether, acetone and water, using a soxhlet apparatus. The extracts were designated as BGV_1, BGV_2 and BGV_3 respectively. Similarly, *Abrus* seeds of the scarlet red variety were ground well and extracted with petroleum ether and sodium chloride. These two extracts were designated as ABP_1 and ABP_2 respectively. All extracts were dissolved in acetone and 1% solutions were prepared for the treatment.

D. cingulatus (red cotton bugs) were reared in the laboratory under controlled conditions and unmated adult bugs were treated topically (within 24 hours) with a micro-applicator on the ventral abdominal region. The applied volume was kept constant at $1\,\mu l$ per insect. Treated insects were caged with untreated, unmated insects of the opposite sex and of the same age. Each experiment had ten males against eight females. The eggs, collected in batches were kept for hatchability studies. Control batches of insects were also maintained in which insects were treated only with the solvent. Experiments in triplicates were continued for twenty days. The mean percentage sterility of triplicate testing is shown in table 1. BGV_1 (the petroleum ether extract) from Bougainvillea gave the maximum sterility when compared with BGV_2 (acetone extract) and BGV_3 (water extract). In males, BGV_1 could induce 90% sterility and in females 74.42% sterility. BGV_2 in its turn induced 67.7% sterility in males and 54.34% in females and BGV_3 induced 46.78% sterility in males and 61.25% in females. BGV_1 and BGV_2 took the usual pattern of inducing higher sterility in males but it is of interest to note that BGV_3 displayed a female sex specificity by inducing nearly 15% greater sterility in females than in males. However, BGV_1 proved a superior sterilant inducing significantly higher sterility in both sexes, while BGV_2 and BGV_3 could be rated only as average sterilants.

Among the two extracts from *Abrus*, ABP_1 and ABP_2, the petroleum ether extract gave 62.6% sterility against males but failed to sterilize females significantly. It could induce only 5.91% sterility in females. ABP_2, the sodium chloride extract showed a low activity of 11.5% and 30.43% sterility in males and females respectively. Overall, the activity of both extracts of *Abrus* was insignificant at the concentrations tested (table 1).

Table 1 *Sterility induced by extracts of Bougainvillea and Abrus precatorius in both sexes of Dysdercus cingulatus*

Extract	% Sterility (mean of triplicates)	
	Male	Female
BGV_1	90.0	74.42
BGV_2	67.7	54.34
BGV_3	46.8	61.25
ABP_1	62.6	5.91
ABP_2	11.5	30.43

In the study of detecting phytosterilants from these two plant products, *Bougainvillea*, by virtue of its superior activity appears to be better suited for commercial exploitation.

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