Histopathology and Histochemistry of the Insects Treated with Chemosterilants.* IV-on the seminal vesicles and accessory glands of *Poicelocerus pictus* treated with Apholate and Tepa

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No report is available on the accessory glands of P. pictus except those of RAI (1964) and OUTRAM and CAMPION (1967) on Aedes aegypti and Ditparopsis castanca. SAXENA and VIKRAMADITYA (1969a, b) studied the histopathological damages caused to the testes by Apholate and Tepa and histochemical localization of DNA in treated insects. In the present investigation, an attempt is made to study the histological damages caused to the male accessory glands and seminal vesicles of P. pictus on treating them with Apholate and Tepa. The effects on seminal vesicles perhaps have not yet been reported as far as we could gather.

Materials and Methods

Chemosterilants Apholate and Tepa made up to the required concentration (0.1 mg), were administered to the insects orally. The insects were decapitated and dissected under physiological saline solution (0.7% saline solution to every 100 ml of which 2 ml of 10% $CaCl_2$ has been added, Baker 1944).

Bouin's, Holly's, and Champty's fixatives were used for fixing the tissues. The stains employed were haematoxylin, eosin and Weigert's iron haematoxylin eosin.

NORMAL HISTOLOGY:

Seminal vesicles: A muscular layer of circular muscle fibres followed by basement membrane on which the epithelial lining rests is seen on the outer side. The epithelium is composed of elongated oval cells without

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distinct boundaries between them. These cells have a nucleus with prominent chromatin. An internal membrane is next to epithelial lining. The sperms are found in the lumen of the seminal vesicles. Bundles of spermatozoa are covered by a cap-like structure, which is intensely stained by hematoxylin (Fig. 1 & 2).

ACCESSORY GLANDS: A, B & C three types of glands are differentiated based on the nature of their secretion in histological preparation of accessory glands.

(a) A-type of glands: It appears to give two different secretions in the lumen; one near the lining of the lumen which is negative to haematoxylin eosin, but turns back with iron haematoxylin, which may be probably an artifact, the other encircled by the former appears to be vacuolated, eosinophilic with haematoxylin eosin and haematoxylin negative with iron haematoxylin. In histological preparation of A-type gland there is a thin muscular layer having scattered small nuclei on the outer side; next is a basement membrane on which the epithelial layer which is a syncitium of elongated cells with dark staining chromatin in the nucleus, rests. A very thin membrane lines the lumen (Fig. 3).

(b) B-type of gland: It gives only one basophilic secretion with haematoxylin eosin. Small are also seen in the secretion comparing with "A" type, in histological preparation, the outer muscular wall is relatively thicker (Fig. 4).

(c) C-type of gland: (Fig. 5 & 2). It gives a thicker non-vacuolated secretion. Because of the presence of nuclei with a different type of secretion in the lumen of this gland, it seems probable that this secretion due to condensation gives rise to thick secretion. Besides certain eosinophilic droplets the mass of haematoxylin granular secretion (faintly positive) which is emptied into the lumen is seen in the epithelium. These eosinophilic droplets also appear in the secretion at earlier stages, i.e. before condensation.

Histopathological observations after treatment with Apholate and Tepa (Fig. 6)

Seminal vesicles and Accessory glands:

No histological damage is recorded in both the tissues of treated P. pictus. Only in the treated nymphs which were reared to maturity, no sperms are seen in the seminal vesicles; the lumen has only the granular material. In "C" type accessory gland several faintly basophilic (haematoxylin positive) bodies of different sizes enclosed in vacuoles are recorded. Besides these observations no other histological damage is observed as a result of treatment with Apholate and Tepa.

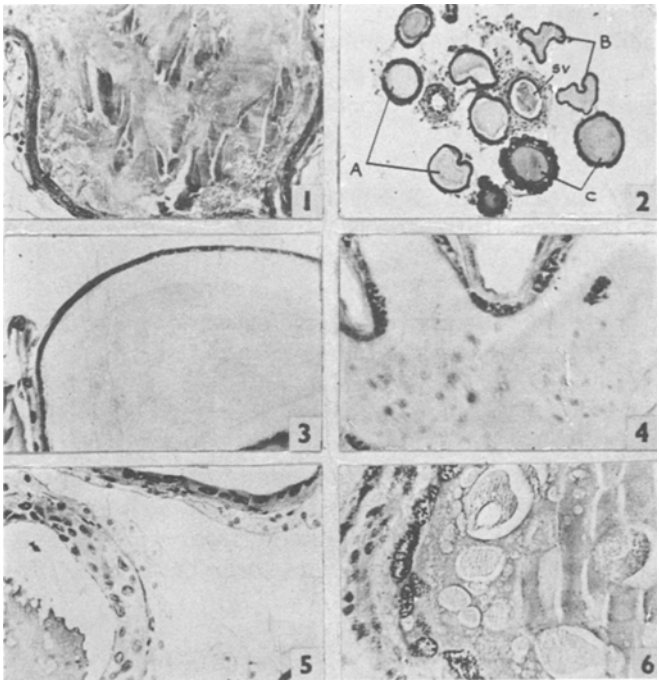

Fig. 1. Photomicrograph of control seminal vesicles of P. pictus showing lumen full of spermatozoa, Haematoxylin eosin x 100.

Figs. 2-6. Photomicrographs of control and treated accessory glands of P. pictus. (2) Haematoxylin eosin x 30.5 (3) Accessory gland (A type) showing two types of secretion in the lumen, Haematoxylin eosin x 100 (4) Accessory gland (B type) showing basophilic secretion with small vacuoles. Haematoxylin eosin x 400 (5) Accessory gland (C type) showing eosinophilic droplets in basophilic secretion, Haematoxylin eosin x 100. (6) Treated accessory gland (C type) showing encapsulated bodies, Haematoxylin eosin x 200.

Discussion

The observations that accessory glands do not suffer any major damage are in accordance with RAI (1964) and OUTRAM and CAMPION (1967). Whether the presence of faintly basophilic bodies is of any significance cannot be ascertained at this stage unless further work is carried out on this aspect. Similarly, no effect is seen in seminal vesicles except the absence of spermatozoa which, of course, may be

expected since the testes exhibit aspermia. The spermatozoa are likely to be present in these seminal vesicles where they had already reached before chemosterilization.

Summary

Except in C-type accessory gland of P. pictus, no effect of Apholate and Tepa is observed on the glands. When treated nymphs are reared to mating no sperms are found in the seminal vesicles.

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