

particular brood is completed in more than one step, keeping a part in the unemerged brood pool in the form of diapausing larvae (figure 1). This probably helps these bees to tide over any sudden and unpredictable violent environmental catastrophes³.

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THE VOLUME OF THE CORPORA ALLATA IN RELATION TO VITELLOGENESIS IN THE BUG *LEPTOCORIS COIMBATORENSIS* GROSS (HEMIPTERA: COREIDAE)

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INSECTS like *Cimex lectularius*, *Oncopeltus-fasciatus* and *Rhodnius prolixus* the egg maturation is controlled by the corpus allatum¹⁻³. During yolk deposition in

the oocytes in *Rhodnius prolixus*, the size of the corpus allatum increases⁴. Similar correlation between the egg maturation and the increased cytoplasmic volume of the corpus allatum has been found in other hemipterans, coleopterans and hymenopterans⁵⁻⁸. Generally the gland size is correlated with the quantity of the gonadotropic hormone produced and its high activity.

This communication deals with the relationship between the volume of the corpora allata (CA) and vitellogenesis, in *Leptocoris coimbatorensis*.

The experimental insects were reared at $30 \pm 1^\circ\text{C}$ and RH of $65 \pm 5\%$. They were fed on soaked soapnuts. The freshly ecdysed adults were treated with $1 \mu\text{l}$ of $0.01 \mu\text{g}$ of hydroprene per insect. The ovaries of the control and treated insects were processed for histological studies. The volume of the CA of these insects was measured with a stage micrometer and oculo-meter and the volume was calculated using Tobe & Pratt's procedure.⁹

Corpora allata are generally paired but in *Leptocoris*, it is unpaired and oval shaped located within the head capsule, posterior to the brain and the corpora cardiaca. The size of the corpus allatum and the stage of development of the oocytes are closely related. Vitellogenesis in the control bugs commences on the second day and continues upto the fourth day, when the oocytes are fully laden with yolk. During vitellogenesis in the controls, the follicular epithelium changes its shape from columnar to cuboidal and then to squamous form, in accordance with the size of the oocyte. The incorporation of the yolk into the oocytes takes place through the intercellular spaces of the follicular epithelium.

The volume of the CA observed was 0.69, 0.79, 0.82, 1.5, 2.53 and 1.1 nl in the 0, 1, 2, 3, 4 and 5 days control adults respectively. This showed that the volume of CA increased gradually upto the fourth day after which it declined, thus coinciding with the oviposition.

In the treated adults the ovaries showed initiation of yolk deposition but on the third day and onwards there was oosorption. The cells of the follicular epithelium did not differentiate as in the controls. The volume of the CA was also considerably different being 0.69, 0.79, 1.2, 0.51 and 0.45 nl in the 0, 1, 2, 3, 4 and 5 days old treated adults respectively. This shows that with the decrease in the volume of the CA further progress of vitellogenesis was prevented (figure 1).

From the above cited results we see that the volume of CA increases upto fourth day and on this day the yolk deposition is almost complete in the controls, thus showing that JH controls vitellogenesis. Application of hydroprene resulted in the fall in the volume of CA

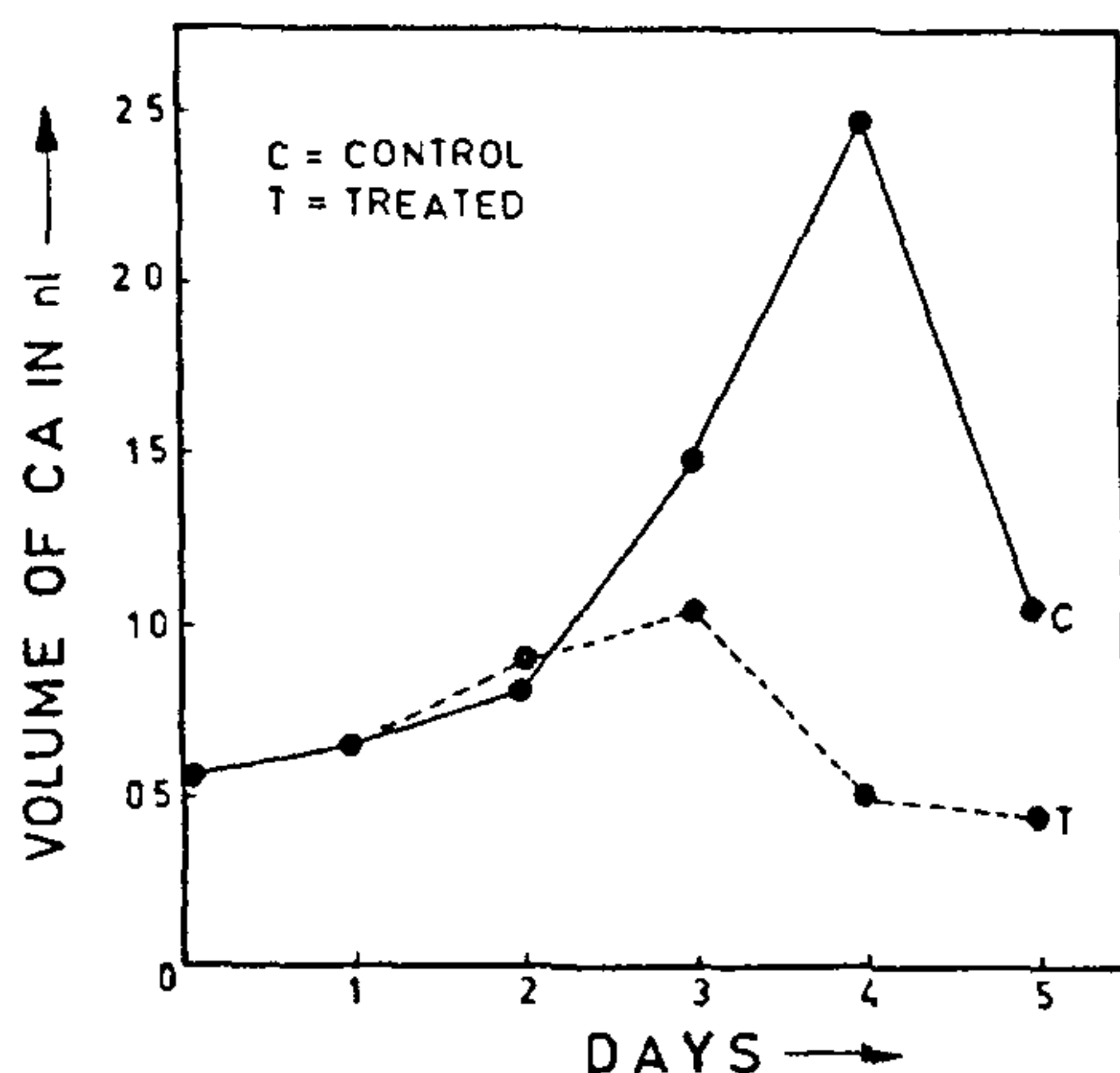


Figure 1. Graph showing the relation between the volume of CA and vitellogenesis in the control and treated adult. nl = nano litres.

leading to oosorption of the oocytes. Thus the juvenile hormone analogue hydroprene inhibited the secretion of JH by the CA. Hence we conclude that an optimum supply of JH is necessary for vitellogenesis and any variations in the titre of JH will lead to changes in the development of the oocytes.

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ON THE INTRACEREBRAL NEUROHAEMAL ORGAN IN ADULT *POEKILOCERUS PICTUS* (ORTHOPTERA: ACRIDIDAE)

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THE phenomenon of neurosecretion and types of neurosecretory cells in the brain of insects have been extensively studied¹. Some description have mentioned the presence of neurosecretory droplets in the protocerebrum outside the paired axonal tracts². Some times they are confined within the fine fibers which leave main axon tracts and re-enter after a short detour³. Some times the granules are present but the fibers are difficult to see⁴. The presence of neurosecretory granules in intracellular spaces has also been reported in *Carausius morosus*⁵ and *Locusta migratoria*⁶. Here the amount of neuropilar neurosecretion is so much that the region has been called a reservoir. In the present investigation paired axonal tract from the median neurosecretory cells after decussation were seen entering in a circular structure situated on the ventral side of the tritocerebrum close to the neurolemma before leaving the brain. A brief description of this structure and its possible role as neurohaemal organ has been discussed.

Adult *P. pictus* of both sexes were picked from the stock reared in the laboratory at $28 \pm 2^\circ\text{C}$. Their brains were dissected out in insect Ringer's solution and fixed for 18–24 hr in aqueous Bouin's fluid. 6 μ thick serial paraffin sections were cut and stained with Paraldehyde fuchsin (PF)⁸ and Chromohaematoxylin-phloxine (CHP) stains.

Four groups of neurosecretory cells, two on either side of the mid-line were seen in the median dorsal region of the parsintercerebralis (figure 1). They were distinguishable into two types, A and B, on the basis of their staining reactions (figure 2). The A cells stained purple with PF and blue black with CHP. The B cells were PF and CHP negative and took green and red colours of the counter stain of PF and CHP respectively.

Bundles of axon fibers arise from each group of NSC. Axons of the two group of each hemisphere unite and form Nervi Corporis Cardiaci (NCC I) on each side before entering the neuropile (figures 1 and 3). Axon tract of both side then cross one another and pass vertically downward. Each tract continues forward