TABLE I

Phospharase activity in different developmental stages of P. brassicae

(mg. inorganic phosphorus/g. body wt/hr)

Enzyme	I instar	II instar	IV instar	V instar	Pupa
Acid phosphatase	1·21 ± 0·08	0·81 ± 0·08	0·61 ± 0·06	0·55 ± 0·04	0·28 ± 0·02
Alkaline phosphatase	0·62 ± 0·07	0·48 ± 0·03	0·41 ± 0·03	0·32 ± 0·03	0·15 ± 0·01

the condition in *P. brassicae*. The increase in the activity of the phosphatases in the succeeding larval stages has been attributed to their role in the intermediate metabolism of foods like carbohydrates and fats, particularly in the transport of metabolites across the intestinal wall[2–4]. Although the total consumption of food in the different larval stages of *P. brassicae* has also been reported to show a gradual increase[9], yet there has been a corresponding decrease in the phosphatase activity in the succeeding larval instars. Thus, a deeper probe is called for into the true role of the phosphatases in the insect nutrition.

It is also seen from Table I that the relative amount of the acid phosphatase is more than that of alkaline phosphatase during the different stages. A similar trend has also been recorded in *Bombyx mori*[1], *Attagenus megatoma*[2].

Department of Zoology,
Punjab University,
Chandigarh 160 014,
December 13, 1979.

SANTOSH DHIR,
H. R. PAJNI.

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CARDIAC SKELETON IN THE HEART OF THE ANURAN AMPHIBIA

A CARDIAC skeleton in the Amphibian heart was first reported in the heart of the tailed Amphibian *Siren lacertina*[1] and was located in the longitudinal septum of the sinus venosus as dense connective tissue. It consisted of bundles of loose connective tissue associated with subendothelium, and the dense connective tissue of the epicardium and the endocardium. Cardiac skeleton of the sinus venosus also extended into the auricles, the ventricle, the conus and the truncus arteriosus. Putnam[1] also stated that the spiral valve of *Siren lacertina* had some vacuolated cells which resembled 'chondroidal tissue'.

A cardiac skeleton in the heart of the tail-less (Anuran) Amphibia is being reported for the first time. It was found in the hearts of the Indian frogs *Rana tigrina*, *Rana cyanophlyctis* and the toad *Bufo melanostictus*. Cardiac skeleton in these anurans is like the one described by Putnam[1], but is specially well-developed in the truncus arteriosus and the aortic trunks. In the truncus arteriosus the dense connective tissue forming the cardiac skeleton is present in (*a*) the partition separating the pulmocutaneous channel from the systemccarotid channel, and (*b*) in the septa separating the pulmocutaneous, systemic and common carotid arches from one another. The truncus arteriosus of the said Anuran Amphibia is divided by a longitudinal septum called the septum principale[2] (Fig. 1).

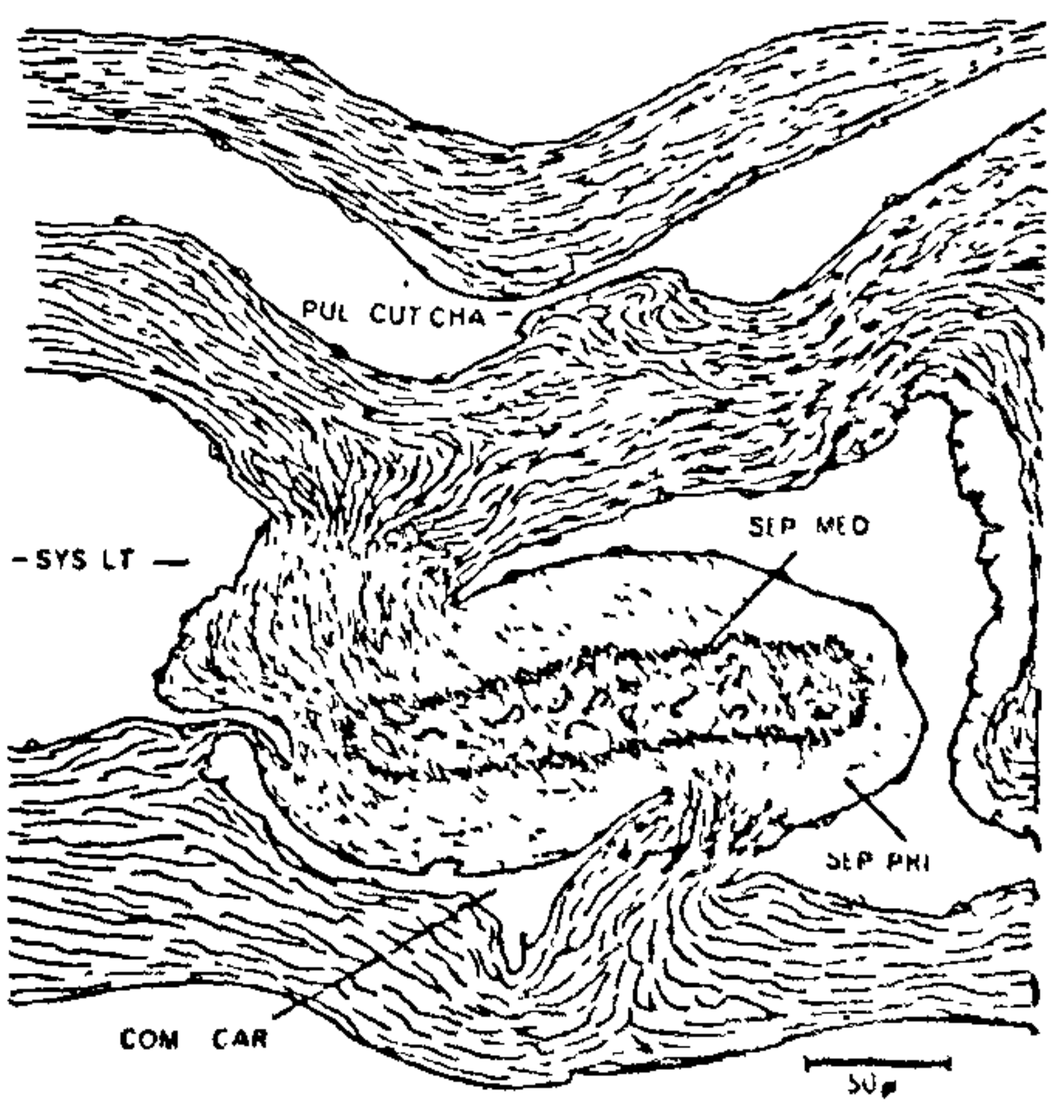

FIG. 1. T.S. truncus arteriosus of *Rana tigrina* through the septum principale. COM.CAR., common carotid arch; PUL.CUT.CHA., pulmocutaneous channel; SYS.LT., left systemic arch; SEP.PRI., septum principale; SEP.MED., septum mediale.

This septum is largely made up of dense connective tissue, while a glistening white ridge in the middle of the septum principale and known as the septum mediale, is composed of not only the dense connective tissue, but herein are vacuolated cells characteristic of the chondroidal tissue.

Chondroidal tissue of the septum mediale approaches the form of hyaline cartilage. This has been confirmed by stained microtome sections (Plate I) and also by the Periodic Acid Schiff's Reaction[3]. PAS-negative reaction also confirmed in the septum mediale the presence of Chondroitin-4 and 6-Sulphates. Their repeating unit is a disaccharide, (1 → 4) O–β–D–glucopyranosyluronic acid-(1 → 3)-2-acetamide-2-deoxy-O-sulpho-β-D-galacto-pyranose.

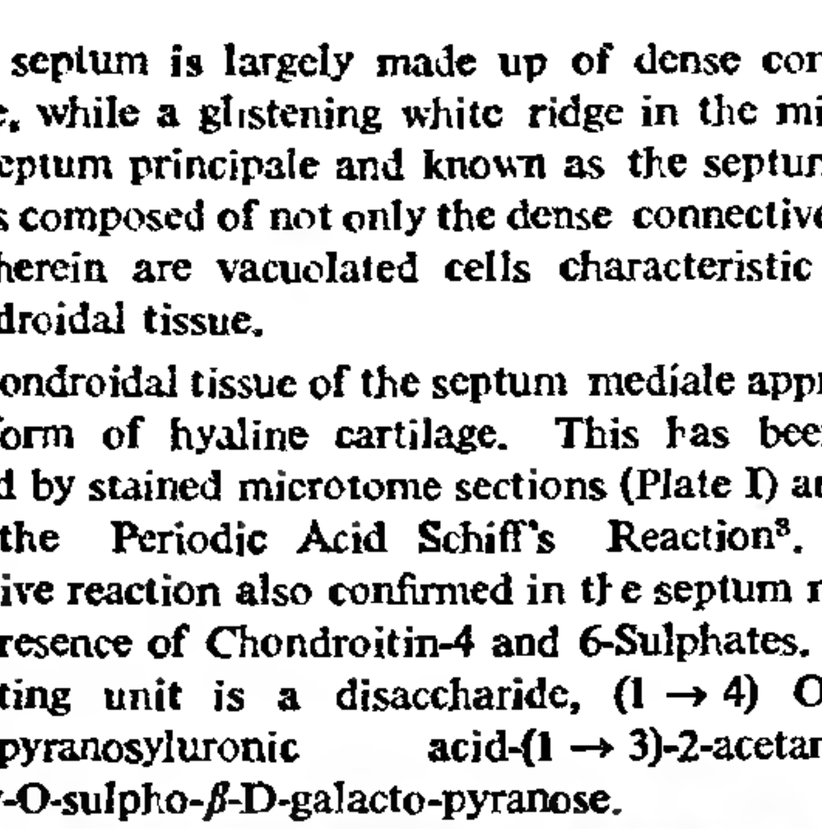

PLATE I. T.S. truncus arteriosus of *Rana tigrina* through the septum principale. SP—septum principale, SM—septum mediale, RS—right systemic arch.

Department of Zoology, HARISH C. NIGAM.
Lucknow Christian College,
C 52, Niralanagar, Lucknow,
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STEROID HORMONE PRODUCING SITES IN THE OVARY OF TWO INDIAN LIZARDS, *VARANUS MONITOR* AND *MABUYA TRIVITTATA*: A HISTOCHEMICAL STUDY

BOTH biochemical and histochemical studies have indicated the capacity of the reptilian ovary to synthesise steroid hormones in addition to gametogenesis[1]. These hormones maintain the sex accessories as in other vertebrates[2]. The present study reports the sites of steroidogenesis in the ovary of two species of Indian lizards, *Varanus monitor* and *Mabuya trivittata*.

Sexually mature female lizards, *V. monitor* and *M. trivittata* collected in and around Mysore city during their breeding seasons (April and May) were used for the present study. Lizards were autopsied by decapitation on the day of collection. The ovaries were dissected out immediately and one of the ovaries (from each animal) was frozen at −20°C for histochemical studies and the other was fixed in Bouin's fluid for histological observations. Histochemical procedures employed for the localization of $\Delta^5 3\beta$- and 17β-hydroxysteroid dehydrogenase (HSDHs), glucose-6-phosphate dehydrogenase (G–6–PDH) and lipids are as reported previously[3,4].

Ovaries of both the lizards showed the presence of yolky follicles and corpora lutea as also oviductal eggs suggesting their active reproductive state. The ovarian follicles characteristically consist of a central oocyte which is surrounded by inner layers of granulosa cells and an outer connective tissue layer, the theca, as in other reptiles.

The $\Delta^5 3\beta$- and 17β-HSDHs activities are localized in granulosa and in patches of theca interna cells of ovarian follicles (Fig. 1), luteal cell mass and theca interna cells of corpora lutea (Fig. 3) and interstitial cells of ovarian stroma (Fig. 2) in *V. monitor*; whereas only follicular granulosa cells (Fig. 4) and luteal cell mass of *M. trivittata* are positive. However, the follicular cortical ooplasm is found positive for all the histochemical tests in both the species (Figs. 1 and 4). In *V. monitor* the intensity of enzyme activity is more in thecal and interstitial cells than in granulosa cells and luteal cell mass as reflected by intense formazan deposition at these sites (Figs. 1–3). There is no substrate specificity for both HSDHs in both the species of lizards. The site of distribution of G–6–PDH and lipids in all the ovarian components agree with the distribution of HSDHs in both the lizards.

Histochemical localization of $\Delta^5 3\beta$-HSDH, β-HSDH and G-6-PDH involved in steroidogenesis and lipids, the precursors of steroids in tissue sections is taken to indicate the sites of steroid biosynthesis in vertebrates[1,2,5,6]. Steroidogenic sites like granulosa, theca interna, luteal cell mass and interstitial cells of the ovarian stroma where these enzymes and lipids are localized in *V. monitor* are the recognized steroidogenic sites in majority of lizards[3,7–11]. However, *M. trivittata* shows a variation from this pattern in that only granulosa and luteal cell mass are the possible sites of steroid biosynthesis as evidenced by their positive responses for all these histochemical tests as reported in *M. carinata*, a sympatric species[12].