Indian Journal of Animal Sciences 65(12): 1315-1316, December 1995

Fibroarchitecture of the pancreas in buffalo*

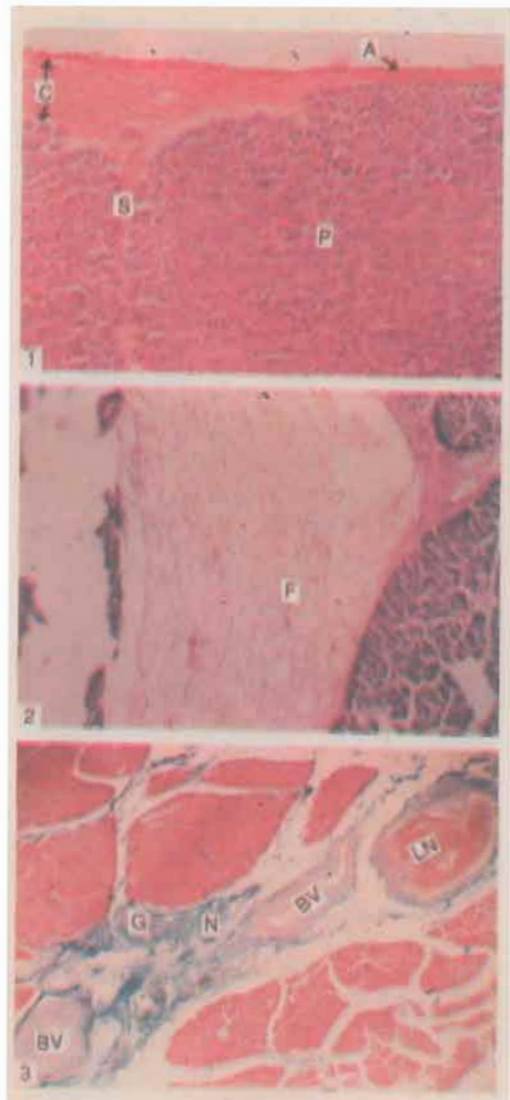
DAVINDER SINGH[1] and A N GUPTA[2]

CCS Haryana Agricultural University, Hisar, Haryana 125 004

Received: 25 October 1994

Exocrine and endocrine components of pancreas in ox (Malik and Prakash 1972) and buffalo (Sharma *et al.* 1984) were studied. Histological and histochemical studies of the fibrous components of pancreas form the basis of the present paper.

Pancreas from 10 buffalo calves between 1-2 years of age irrespective of sexual difference were collected and fixed in neutral buffered 10% formalin, formol saline, Helly's solution, Bouin's solution, Carnoy's solution, chilled absolute alcohol, chilled acetone and processed for paraffin and frozen sectioning. The sections of 5 to 7 µm thickness were stained with Harri's haematoxylin and eosin, Gomori's silver, Weigert's Resorcin Fuchsin and Crossman's trichrome stains for studying fibroarchitecture of the pancreatic tissue. Histochemical stains included PAS-Alcian blue method for mucus substances, Best's caramine for glycogen, Sudan-black-B and oil-red-'O' for fats, Nile blue sulphate for



Figs 1-3 Photomicrograph of pancreas showing: **1.** The fibrous capsule (C), peritoneal coat (A), interlobular septa (S) and parenchyma (P). H & E. × 50; **2.** Interlobular adipose tissue (F). H & E. × 20; **3.** Autonomic ganglion (G), nerve bundle (N), lymphnode (LN) and blood vessels (BV) in the interlobular space. Collagenous fibres can also be seen. Crossman's trichrome stain × 10.

*Part of M.V. Sc. Thesis submitted by the first author to CCSHAU, Hisar.

Present address: [1]Veterinary Officer, R.V.C., Meerut Cantt, Uttar Pradesh 250 001.

[2]Associate Professor, Department of Anatomy and Histology, College of Veterinary Sciences.

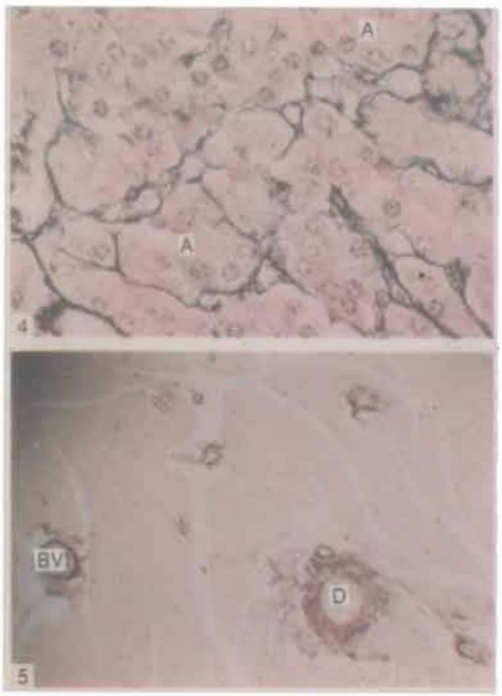
fatty acids and Gomori's revised methods for acid and alkaline phosphatase enzymes.

The fibrous component of pancreas constituted about 15.70% of the total pancreatic tissue. The capsule measured 13.60 to 95.20 µm in thickness with an average of 40.41±22.67 µm being maximum at the origin of interlobular septa. It consisted of dense irregularly arranged collagenous (Fig. 1), reticular and few elastic connective tissue fibres. Banks (1981) reported it to be made up of dense white fibrous tissue in domestic animals, whereas Singh (1975) denied the presence of a definite capsule around the pancreas of domestic animals except that of dog. A layer of mesodermal cells at the outer surface of the capsule formed a peritoneal coat. At places fatty masses and blood vessels were seen.

The glandular stroma showed loosely arranged collagenous and reticular fibres with only a few elastic fibres. Interlobular septa contained adipose tissue (Fig. 2). Autonomic ganglion of various sizes, nerve bundles, blood vessels and occasional lymphnodules occurred in intralobular septa (Fig. 3).

The intralobular septa divided the lobules into incomplete sub-lobules. The reticular fibres occurred around the acini (Fig. 4), walls of sinusoids, capillaries traversing the islets and the basement membrane of the duct epithelium. Dense collagen fibres surrounded the intralobular ducts while the elastic fibres occurred in the walls of blood vessels and ducts (Fig. 5).

Histochemically, except for bound lipids in subcapsular and intralobular adipose tissue, no other kind of fat, mucosubstances, glycogen or enzyme could be demonstrated in the capsule or stroma of the pancreas.



Figs 4-5. Photomicrograph of pancreas showing : 4. arrangement of reticular fibres around the acini (A). Gomori's silver stain. x 200; 5. Elastic fibres in the wall of the intralobular duct (D) and blood vessels (BV). Weigert's Resorcin Fuchscin stain. x 10.

REFERENCES

Banks W J. 1981. *Applied Veterinary Histology*. Williams and Wilkins, Baltimore.

Malik M R and Prakash P. 1972. Comparative histology of the pancreas of buffalo and ox: A note. *Indian Journal of Animal Sciences* **42**: 681-82.

Sharma D N, Dhingra L D and Barnwal A K. 1984. Histomorphology of the endocrine portion of pancreas of buffalo calf. *Haryana Veterinarian* **23**: 9-14.

Singh L P. 1975. 'Histological and histochemical studies on the pancreas of domestic animals.' Ph.D. Thesis, Magadh University, Bodh Gaya.