



Anatomy of Pancreas in Mynah (*Acridotheres tristis*)

Z. Saadatfar*, M. Asadian

Department of Anatomical Science
School of Veterinary Medicine
Ferdowsi University of Mashhad
Mashhad, 91775-1793, Iran

(Received January 13, 2009; accepted May 14, 2009)

Abstract

Saadatfar, Z. and Asadian, M. 2009. Anatomy of pancreas in mynah (*Acridotheres tristis*). J. Appl. Anim. Res., 36: 191-193.

In the present study the histology of the exocrine and endocrine portions of pancreas in Mynah have been studied. Mynah's pancreas had three lobes. Acini were round to oval in shape with large granules. Ducts in exocrine part had simple to stratified cuboidal epithelium with muscular layer around and without any gland. In dorsal lobe, A islets were more than B islets and in ventral lobe, B islets were more than A islets. B islets were composed of B cells and D cells at the periphery. The structure of mynah's pancreas was similar to that of other avian species with minor differences.

Key words: Avian pancreas, anatomy, histology, Mynah.

Introduction

The avian pancreas differs from other animals in being composed of two or more lobes and in containing two islet types (Gulmez, 2003). There are many species differences in structure of avian pancreas. Division of lobes, distribution of the islets in lobes, the form and frequency of endocrine cells in islets and structure of ducts are the most important differences. The present study was conducted to investigate the structure of mynah's pancreas to provide base line information.

Materials and Methods

After anesthesia, tissue pieces were dissected from the lobes of pancreas of four adult mynahs (*Acridotheres tristis*). Samples were fixed in

formalin solution, processed for embedding in paraffin. Sections (6 μ thick) were cut, stained with Hematoxyline & Eosin for general observations and Gomori's stain for pancreatic islet cells.

Results and Discussion

The mynah's pancreas, as in other birds, was located between two arms of duodenal loop (Fig. 1). There were two main lobes. The dorsal lobe was 2 cm long, 0.1-0.4 cm wide. The ventral lobe was divided into two distinct segments; one of them was extension of this lobe out of the duodenal loops. These segments were ventral lobe 3-3.5 cm long and 0.1-0.3 cm wide and third lobe 1cm long and 0.2-0.7 cm wide. Mynah did not have the spleen segment as those found in other birds (Fig. 1).

In dorsal lobe, the endocrine parts were as islets of various sizes and shapes scattered

*For correspondence: Tel/Fax: (+98) (0511) 8763852;
E-mail: saadat_histo@yahoo.com

in small groups of cells (Fig. 2). A islets were more and larger than B islets. They had no distinct borders with the exocrine parts and were more densely populated than B islets. With Gomori stain, A cells demonstrated fine, red staining granules throughout the cytoplasm and D cells presented little or no granules. The nucleus in both cell types seemed similar and was round to oval in shape with a prominent nucleolus. There were A cells and D cells and a few B cells inside A islets (Fig. 2). D cells were distributed in all parts of A islets. B islets resembled human islets in shape (spherical). They showed a light-staining



Fig. 1. A mynah's pancreas. Note the pancreas is attached in duodenal loop. D-Dorsal lobe; V-Ventral lobe; T-third lobe (X40).

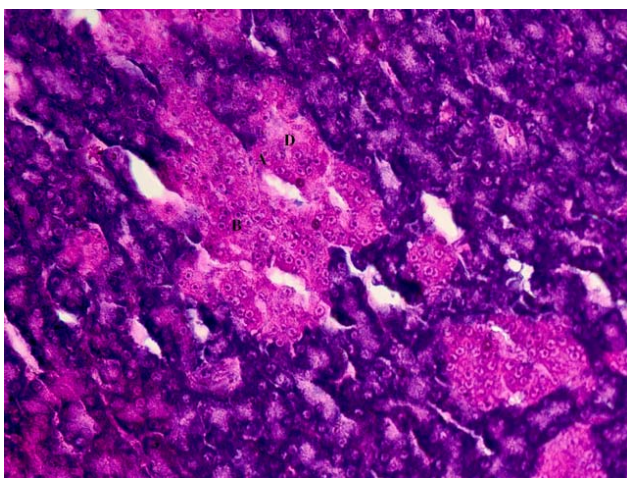


Fig. 2. Dark, A islets in mynah's pancreas. Gomori's staining method (X40).

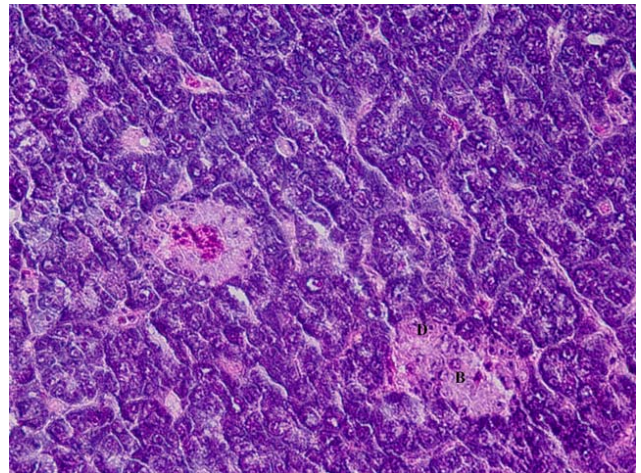


Fig. 3. Light, B islets in mynah's pancreas. Gomori's staining method (X40).

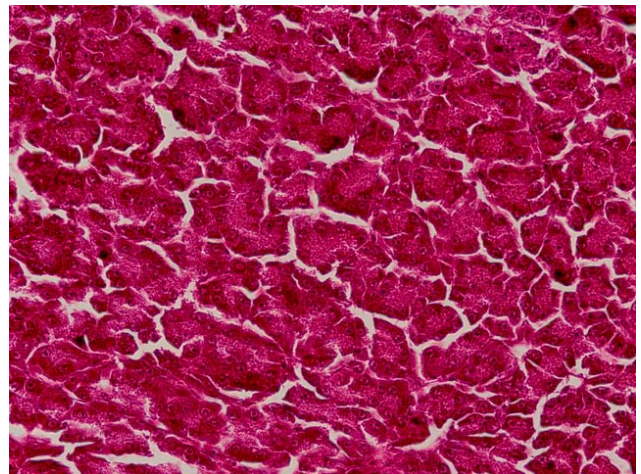


Fig. 4. Acinus's and eosinophilic granules. No centroacinar cells in pancreatic acinus's (H&E) (X40).

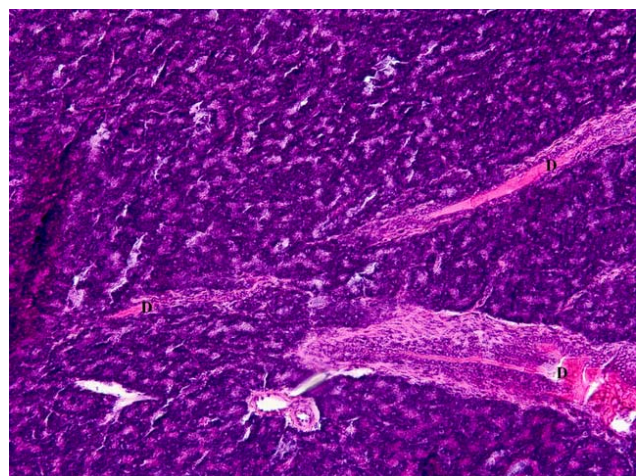


Fig. 5. Exocrine pancreas with ducts in different sizes Gomori's staining method (X10).

group, smaller than A islets and were distinctly separated from the exocrine part by connective tissue (Fig. 3). B islets were composed of B cells with a fine granulation which stained bluish with Gomori's stain. There were also some D cells at periphery of the B islets, but there were no A cells in these islets (Fig. 3).

In ventral lobe frequency of B islets with different sizes were more than that of A islets, but other observations were similar to dorsal lobe.

The exocrine part was composed of acini and ducts. The acini were round to oval in shape with large granules; they had no centroacinar cell (Fig. 4). Their ducts were of different sizes with simple to stratified cuboidal epithelium. The ducts, especially the large ones had muscular layers which were arranged more in circular layers around them (Fig. 5).

According to these observations mynah's pancreas had no splenic lobe, but many other birds as duck (Mcclish *et al.*, 1969), chicken (Gencer *et al.*, 2007) and goose (Gulmez *et al.*, 2004) have four lobes and spleen segment is attached to the dorsal lobe. The third lobe in mynah, as in chicken, was a part of the ventral lobe (Gencer *et al.*, 2007).

In A islet, A cells were present in all parts of the islet. However many reports illustrate that in avian pancreas these cells are in peripheral region (Mensha Brown *et al.*, 2000; Gulmez *et al.*, 2004). B cells in B islet, like other avian species (Gulmez *et al.*, 2004; Tarakcy *et al.*, 2005) were demonstrated in the center of the pancreatic islets. D cells in Mynah were also seen in both A and B islets (Gencer *et al.*, 2007). However, in A islets, we found a few B cells but in some avian pancreas there were no B cells in the A islets (Gulmez *et al.*, 2004). In the Mynah exocrine pancreas, there were no centroacinar cells but they are present in central lumen of acini in some species (Gulmez, 2003). The ducts in Mynah were similar to that observed in previous studies. In addition, many circular smooth muscles were present around it but there wasn't any

gland in its wall as in goose pancreatic duct. In conclusion the structure of mynahs (*Acridotheres tristis*) pancreas was found to be similar to that of other avian species except few minor differences.

Acknowledgement

The authors are thankful to Mr. Pooradib in histology laboratory for processing.

References

- Gulmez, N. 2003. Are glands present in goose pancreatic ducts? A light microscope study. *J.O.P. J. Pancreas* (online), 4(3): 125-128.
- Gulmez, N., Kokamis, H., Alsan, S. and Nazli, M. 2004. Immunohistochemical distribution of cells containing insulin, glucagon and somastatin in the goose (*Anser anser*) pancreas. *Turk. J. Vet.*, 28: 403-407.
- McClish, R.D. and Eglitis, J.A. 1969. Distribution of the A and B cells and of the islets (Langerhans) in the duck pancreas. *Ohio. J. Sci.*, 69: 285-293.
- Mensah-Brown, E.P.K., Bailey, T.A., Pallot, D.J. and Garner, A. 2000. Peptidergic hormones and neuropeptides and aminergic neurotransmitters of the pancreatic islets of the Houbara bustard (*Chlamydotis undulate*). *J. Anat.*, 196: 233-241.
- Gencer, B.T., Yaman, M. and Bayrakdar, A. 2007. Immunohistochemical study on the endocrine cells in the pancreas of the ostrich (*Struthio camelus*). *J. Anim.Vet. Adv.*, 6: 693-696.
- Tarakcy, G.B., Yaman, M., Bayrakdar A. and Atlar, O. 2005. Immunohistochemical detection of gonadotropin-releasing hormone (GnRH) in porcupine (*Hystrix cristata*) pancreas. *J. Anim. Vet.*, 8: 747-749.