Short Communication

AGE RELATED HISTOCHEMICAL OBSERVATIONS OF PANCREAS IN JAPANESE QUAIL (*COTURNIX COTURNIX JAPONICA*)

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ABSTRACT

In all age groups of birds, there was significant PAS positive activity in the capsule, septa, apical region of lining epithelial cells of intercalated duct, intralobular duct, and interlobular duct, as well as blood vessels in all lobes of the pancreas. The PAS positive activity of the zymogen granules in groups I and II was extremely high, whereas it was reduced to moderate and moderate to low in groups III and IV, respectively. Intense PAS activity was visible on the basement membrane and apical border of the lining epithelial cells of interlobar ducts. All endocrine lobes across all age groups of birds had modest to moderate PAS activity.

Keywords: : Japanease quail, pancreas, histochemistry

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INTRODUCTION

Although it has increasingly moved toward an industrial economy, India has always been renowned for its predominantly agrarian economy. Since the majority of the population of the nation still depends on agriculture and related activities, there is a lot of room for industries like the poultry industry to grow and improve in order to be very helpful for the general public and to contribute to the country's ability to earn foreign currency through exports.

Quail are little birds that are raised commercially for their meat and eggs. Due to the low initial investment and ongoing care costs compared to other bird species, commercial quail farming is becoming more and more popular in India.

Compared to other poultry birds, Japanese quails grow quickly since they begin producing eggs at about 6-7 weeks of age. Japanese quails are preferable over poultry in the commercial and research sectors due to their early maturity, quick reproduction cycle, and disease tolerance (Sivakumar *et al.,* 1999).

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MATERIALS AND METHODS

For the present study, 48 Japanese quail (*Coturnix coturnix japonica*) birds were procured from authenticated source and were reared poultry farm of College of Veterinary and Animal Science, Parbhani under standard managemental quail rearing practices. The pancreas was collected from 12 birds each at end of first week, second week, third week and fourth week. The birds were sacrificed by cranial subluxation. The pancreas was observed and collected by abdominal laparotomy and cranial displacement of sternum.

The collected organs were washed with normal saline to remove any of adhering debris and were fixed in 10% neutral buffered formalin, 10% formal saline and Bouin's fluid. Then the tissues were processed for routine paraffin embedding as per the method of Drury and Wallington (1980). Sections of 5 µm thickness were processed for following staining procedures for histochemical studies.

RESULT AND DISCUSSION

The presence of glycogen was identified by using Periodic Acid Schiff's reaction (PAS). In the present study Periodic Acid Schiff's reaction in capsule, septa, apical portion of lining epithelial cells of intercalated duct, intralobular duct and interlobular duct of all lobes of pancreas in all age groups of birds showed strong PAS positive activity. The intense PAS positive activity was recorded in the zymogen granules of apical portion of acinar cell in group I and group II and thereafter it was reduced with the advancement of age in group III and group IV, where it was moderate and moderate to low respectively. The intense PAS activity was observed in the apical border of the lining epithelial cells and basement membrane of interlobar ducts in all age groups of birds. The blood vessels in all pancreatic lobes in all age group showed strong PAS positive activity. During present study weak to moderate activity was observed in the endocrine part of all lobes of all age group of birds (Fig - 1 to 6).

The observations of the present study are paralled to the findings of Sivakumar *et al.* (2000) in Japanese quail and Deprem *et al.* (2015) in goose, they reported PAS positive activity in lining epithelium of pancreatic duct. Hamodi *et al.* (2013) in guinea fowl and common gull, also reported moderate PAS activity in pancreatic islets cells.

CONCLUSION

The capsule, septa, apical portion of lining epithelial cells of intercalated duct, intralobular duct and interlobular duct, blood vessels of all lobes of pancreas in all age groups of quail birds showed strong (PAS) positive activity. The zymogen granules in group I and group II showed intense (PAS) positive activity which was reduced to moderate and moderate to low in group III and group IV respectively. The apical border of the lining epithelial cells and basement membrane of interlobar ducts showed intense PAS activity. The endocrine part of all lobes in all age group of birds was weak to moderate in PAS activity.

The strong PAS-positive activity in the exocrine regions of the pancreas (capsule, septa, ducts, and zymogen granules) reflects high glycogen or mucosubstance content, likely supporting secretory and protective functions. The reduction in PAS activity in zymogen granules with age suggests a decline in secretory activity or metabolic demand as birds mature. The endocrine part shows consistently lower PAS activity, consistent with its primarily hormonal function. These findings are in agreement with previous studies in other avian species, reinforcing the conserved nature of pancreatic carbohydrate distribution in birds

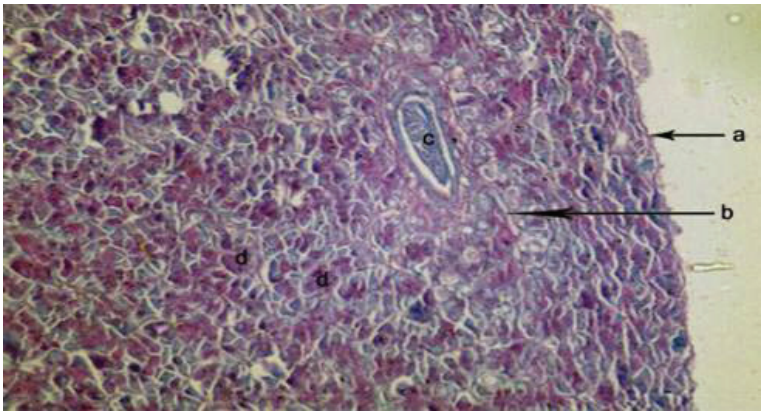

Fig. 1. Photomicrograph of dorsal lobe of pancreas in group I
a-Capsule, b-Intercalated duc,t c- Intralobular duc,t d-Exocrine acini
(Periodic acid schiff's, X 400)

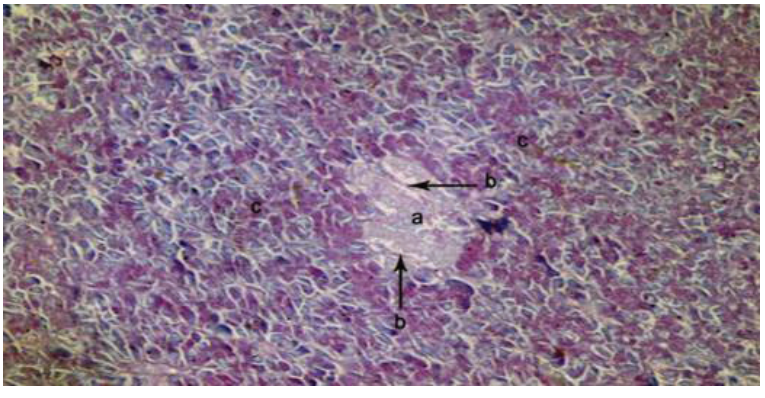

Fig.2. Photomicrograph of dorsal lobe of pancreas in group I
a-Alpha islet b-Blood vessel c-Exocrine acini (Periodic acid schiff's, X 400)

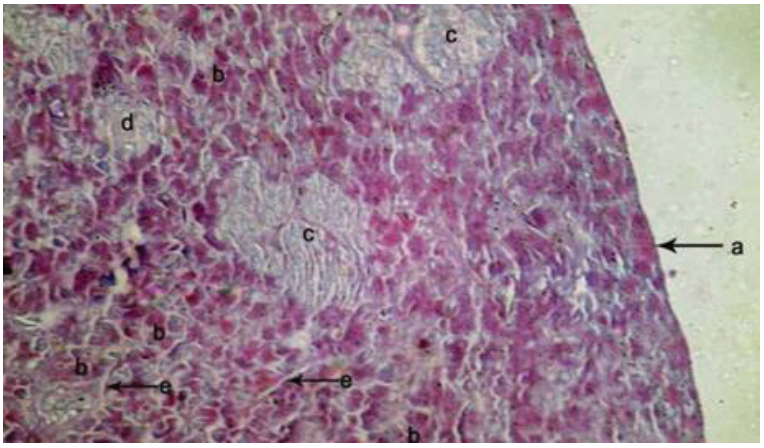

Fig. 3. Photomicrograph of splenic lobe of pancreas in group II
a- Capsule b-Exocrine acini c-Alpha islet d-Beta islete.Intercalated duct
(Periodic acid schiff's,X 400)

Fig.4. Photomicrograph showing Interlobar duct in group II
a-Epithelium of intralobar duct b-Basement membrane c-Blood vessel
(Periodic acid schiff's,X 400)

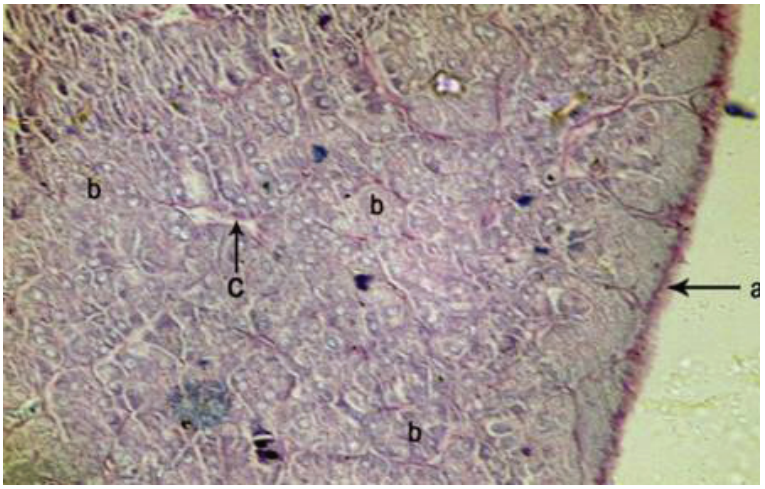

Fig.5. Photomicrograph of third lobe of pancreas in group III
a- Capsule b-Exocrine acini c-Blood vessel (Periodic acid schiff's, X 400)

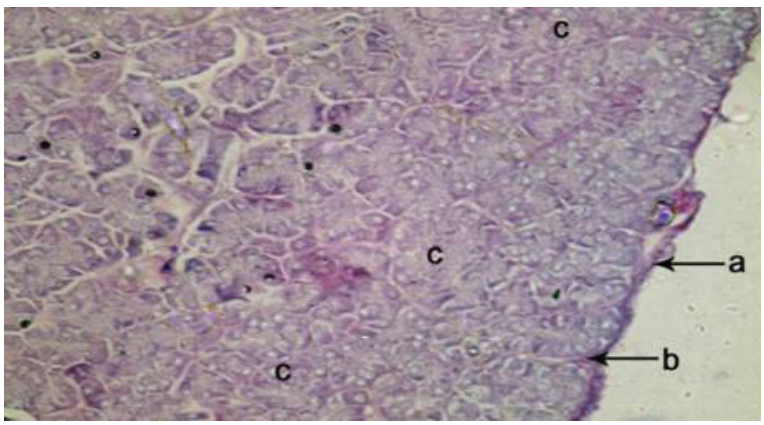

Fig.6. Photomicrograph of ventral lobe of pancreas in group IV
a- Capsule b-Septa c-Exocrine acini (Periodic acid schiff's X 400)

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