

**MICROANATOMICAL STUDIES ON THE LIVER AND
THE GALL BLADDER OF THE JAPANESE QUAIL
(*Coturnix coturnix japonica*)**



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CERTIFICATE

This is to certify that the thesis entitled "**MICROANATOMICAL STUDIES ON THE LIVER AND THE GALL BLADDER OF THE JAPANESE QUAIL (*Coturnix coturnix japonica*)**" submitted in partial fulfilment of the requirement for the degree of **MASTER OF VETERINARY SCIENCE in ANATOMY** to the Tamilnadu Veterinary and Animal Sciences University, Chennai, is a record of bonafide research work carried out by **Mrs.P.V.RAJEE**, under my supervision and guidance and that no part of this thesis has been submitted for the award of any other degree, diploma, fellowship, or other similar titles or prizes and that the work has not been published in part or full, in any scientific or popular journal or magazine.

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ABSTRACT

Title

: MICROANATOMICAL STUDIES ON
THE LIVER AND THE GALL
BLADDER OF THE JAPANESE
QUAIL (*Coturnix coturnix*
japonica).

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A study on the histogenesis, histomorphology and histochemistry of the liver and the gall bladder was conducted in the pre-hatch and post-hatch age groups of Japanese quail.

Tissue pieces were collected in different fixatives for routine paraffin embedding. Paraffin sections were used for routine and special staining techniques. Frozen sections were used for histochemical staining techniques.

The primordium of the liver was first observed on the second day of incubation in the Japanese quail, as two ventral evaginations from the floor of the foregut. The cells of the evaginations were found to surround the sides of the ductus venosus on the third day of incubation. On the fourth day of incubation, the hepatic cells got arranged themselves as thick cords by anastomosing with each other. These cords invaded the ductus venosus forming the capillary spaces in-between the hepatic cords. From the fifth day of incubation the development of liver chiefly consisted of further growth in size.

The appearance of the gall bladder was observed on the fourth day of incubation in the ventral evagination of the primordium of the liver. Further growth in the size of the structures was noticed during subsequent days of incubation.

The liver was a compound tubular gland covered by a thin Glisson's capsule. The lobulation was indistinct. The hepatic lobule was centered on the central vein with portal canals at the periphery. The hepatocytes were arranged in the form of anastomosing cords.

The hepatocytes were polygonal in shape with a centrally placed nucleus. The cytoplasm was granular and acidophilic. The hepatocyte cords were surrounded by sinusoids.

Lymphocytic aggregation in the interstices of hepatic cords and around the vessels and ducts in the portal canals were conspicuous. Eosinophils and few plasma cells could be observed.

The wall of the gall bladder showed tunica mucosa, tunica muscularis and tunica serosa. The mucosa is lined by tall columnar cells with basally located nuclei.

Glycogen and lipids were abundant in the hepatocytes. The epithelial cells lining the extrahepatic ducts and the gall bladder showed the presence of glycogen and acid mucopolysaccharides. The hepatocytes revealed a positive reaction for protein.

The alkaline phosphatase activity was high in the sinusoidal borders in the centrilobular region. Acid phosphatase activity was high in the Kupffer cells and the bile canaliculi. The alkaline and acid phosphatase activities were mild in the epithelium of the ducts and the gall bladder.

Succinic dehydrogenase activity was marked in the hepatocytes. Adenosine triphosphatase activity was intense in the bile canaliculi and in the central vein. Glucose - 6 - phosphatase activity was observed in the hepatocytes.