Comparative Histological and Histochemical Studies on Epididymis of Aseel and Vanaraja Breeds of Poultry

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ABSTRACT
A comparative histological and histochemical study was conducted in grower and adult poultry birds of Aseel and Vanaraja breeds. The epididymis consisted of proximal and distal efferent ductules, connecting ductules and ductus epididymidis. The lining epithelium of the efferent ductules was simple columnar to pseudostratified columnar in growers, while in adult it was ciliated pseudostratified columnar. The mucosal folds in the efferent ductules were leaf to tongue shaped, while in connecting ductule the mucous membrane was not folded. The height of epithelium and diameter of efferent ductules, connecting ductules and ductus epididymidis was significantly lower in Aseel than Vanaraja breed of poultry. Periodic acid Schiff’s and Alcian blue - periodic acid Schiff’s activity was weaker in epididymis of Aseel as compared to that of Vanaraja.

Key words: Aseel, Epididymis, Histochemistry, Histology, Vanaraja

Vanaraja is dual purpose breed of poultry, whereas Aseel is an indigenous breed of southern part of Chhattisgarh and adjoining area of Andhra Pradesh. There is paucity of detailed information on histology and histochemistry of epididymis in Aseel and Vanaraja breeds of poultry. Hence, the present experiment was designed to explore the histological and histochemical details of the epididymis.

MATERIALS AND METHODS
The study was conducted on 40 apparently healthy birds belonging to two age groups viz. 5 months (grower) and 13 months (adult) of Aseel and Vanaraja breeds of poultry. Each group was having 20 birds (10 Aseel and 10 Vanaraja). The birds were procured from Government Poultry Farms, Jagdalpur and Durg. The tissues were collected from cranial, middle and caudal parts of epididymis and fixed in 10% buffered formalin for 24-48 h. The fixed tissue samples were processed in alcohol-xylene method, embedded and blocked in paraffin wax (Singh and Sulochana, 1997). The paraffin sections of the tissues were stained with haematoxylin and eosin for normal histological studies, Van Gieson’s method for collagen, Gomori’s method for reticular, Verhoeff’s method for elastic fibres, periodic acid Schiff’s method for carbohydrates and Alcian blue - periodic acid Schiff’s method for mucopolysaccharides. Micrometry was done with the help of micrometer. After recording different histological parameters of the epididymis, the data were analyzed statistically (Snedecor and Cochran, 1994).

RESULTS AND DISCUSSION
The epididymis was covered by an independent fibrous connective tissue capsule, tunica albuginea with mesothelial outer covering. The epididymis was consisted of proximal and distal efferent ductules, connecting ductules and ductus epididymidis (Figs. 1, 2). Few smooth muscle fibres were seen in the wall of epididymis as reported in white rooster Razi et al. (2010). Small lymphatic nodules were also noticed in the connective tissue of the epididymis in adult birds of Aseel and Vanaraja as observed by Osman (1980) in domestic fowl. Autonomic ganglia were noticed adjacent to ductus epididymidis in the adjoining connective tissue under the tunica albuginea in adults of Vanaraja. The number of efferent ductules in right and left epididymis was significantly lower in adults and growers of Aseel (20±0.99) and Vanaraja (25±1.25).

The lining epithelium of the efferent ductules was ciliated pseudostratified columnar in adults, while in growers, it was simple columnar to pseudostratified columnar as reported by Aire (1979) in Japanese quail and Razi et al. (2010) in white rooster. The height of epithelium of efferent ductules in right and left epididymis was significantly lower in growers and adults of Aseel (14.12±0.71 µ) than Vanaraja (17.6±0.88 µ). The mucosal folds in the efferent ductules were of leaf to tongue shaped. Several folds were very tall...
having primary and secondary branching and at times tertiary branches. Most of the efferent ductules showed no mucosal folds in growers of Aseel. The height of mucosal folds of efferent ductules in right and left epididymis was significantly lower in growers and adults of Aseel (52.2±2.61 µ) than Vanaraja (62.92±3.15 µ). The maximum and minimum diameters of efferent ductules in right and left epididymis were significantly lower in growers and adults of Aseel (463.64±23.18 µ) than Vanaraja (576.28±28.81 µ).

Connecting ductules were also lined by pseudostratified epithelium with less cilia as reported in fowl (Tingari, 1971) and in white rooster (Razi et al., 2010). In growers, the connecting ductules had high cuboidal to simple columnar epithelium without any fold. The height of epithelium of connecting ductules in right and left epididymis was significantly lower in growers and adults of Aseel (13.12±0.66 µ) than Vanaraja (16.6±0.83 µ). The maximum and minimum diameters of connecting ductules in right and left epididymis were significantly lower in growers and adults of Aseel (233.32±11.67 µ) than Vanaraja (290.64±14.53 µ).

The wall of ductus epididymidis had similar structure of the wall to that of the connecting ductules. It confirmed the findings of Aire (1979) in Japanese quail and Razi et al. (2010) in white rooster. The diameter of the ductus epididymidis was the highest as compared to earlier three varieties of channels. The height of epithelium of ductus epididymidis in right and left epididymis was significantly lower in growers and adults of Aseel (15.12±0.76 µ) than Vanaraja (18.6±0.93 µ). Most of the ductus epididymidis showed no mucosal folds in growers. The height of mucosal folds of ductus epididymidis in right and left epididymis was significantly lower in growers and adults of Aseel (47.2±2.36 µ) than Vanaraja (56.92±2.85 µ). The maximum and minimum diameter of ductus epididymis in right and left epididymis of Aseel and Vanaraja were significantly lower in growers and adults of Aseel (295.25±14.76 µ) than Vanaraja (439.76±21.99 µ).

The connective tissue fibers were densely arranged all around the epididymis forming part of the tunica albuginea as reported earlier (Osman, 1980). The density of fibres was less in Aseel as compared to Vanaraja. The density of fibres was less in growers as compared to adults (Fig. 3). In growers, the reaction was weak to moderate. Mild PAS activity was seen in Aseel as compared to Vanaraja (Fig. 4). Moderate acid mucopolysaccharides were recorded in tunica albuginea, connective tissue, basement membrane of all ductules and apical part of epithelial cells. These observations confirmed the findings of Lee and Ha (1983). Alcian blue-PAS activity was weak in Aseel as compared to Vanaraja.

REFERENCES


