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MORPHOLOGICAL STUDIES ON THE UROPYGIAL GLAND OF BELTSVILLE SMALL WHITE BREED OF TURKEYS (*Meleagirs gallopavo*)

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Abstract: The uropygial gland is a cutaneous gland present in turkey. The uropygial glands were collected for sixteen turkeys of both the sexes in the age group of nine months from the Kerala Agricultural university meat plant and were used for the study. It was an unpaired bilobed gland. It was located on the dorsal surface of the synsacral region extending from the second to fourth coccygeal vertebrae. The dorsal surface of the glands was convex while the ventral surface was flattened. The lobes of the gland were pear shaped and creamy yellowish in colour. The common papilla of the gland was thick and long. The papilla extended from posterodorsal end of the glands and directed dorsocaudally. The common papilla contained a single duct which conveyed secretions from both the lobes to the exterior. The mean weight, length, width and thickness of the right and left lobes and the weight, length and width of the papilla were measured. The length of the papilla was two-third of the length of the lobe and the lobes were twice thicker than the papilla. High significant positive correlation was noticed between the body weight and gland weight, body weight and papilla weight and body weight and percent gland weight.
Key words: Morphology, Uropygial gland, Beltsville small white, Turkey.

The gross anatomical aspects of the uropygial glands in domestic birds [4],[1] and ducks [6] were done. Uropygial gland is the only cutaneous gland present in birds and was immunologically important [4]. But the detailed study on the morphology and morphometry of the uropygial gland in turkey is scanty. To bridge this deficiency, the present study was undertaken to trace the gross structure, various physical parameters and the percentage body weight of the gland in Beltsville small white breed of turkey.

Materials and Methods

Sixteen turkeys of both the sexes in the age group of nine months collected from Kerala Agricultural university meat plant were used for the present study. Gross observations like colour, shape and position of the gland were made after removing the skin covering the

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glands. Various measurements of the right and left lobes and the papilla were taken and percentage body weight was calculated. The data was analyzed statistically [9].

Results and Discussion

The uropygial gland is a cutaneous gland present in turkey. It was better developed in aquatic species of birds than land birds [1]. Among land birds, the uropygial glands are well developed in domestic birds like fowl and Japanese quail [4]. The secretion of these glands in turkey may have a role in intraspecies communication [3].

The uropygial gland in turkey appeared as an unpaired bilobed gland. Similar observations were made in the fowl and Japanese quail [4]. In contrast to this, in drongo [8] and in duck [6], it was a paired organ. These may be due to the species difference. The uropygial glands were located on the dorsal surface of the synsacral region extending from the second to the fourth coccygeal vertebra while it was located in the pygostyle region in drongo [8].

The uropygial gland in the present study had two lobes namely right and left and a common papilla with ducts which drained the secretion from these glands. The lobes were directed forward and outward. The dorsal surface of the glands was convex while the ventral surface was flattened because of its relation with the muscles of the tail. The gland was related to coccygeus lateralis muscle ventrally and coccygeus muscle ventrolaterally as reported in other domestic birds [1].

The lobes of the uropygial gland were pear shaped. this concurs with the findings in turkey, chicken and duck [4] while they were reported to the oblong in shape in Japanese quail [1] and oval shaped in drongo [8]. The glands were creamy yellowish in colour [6] in ducks.

The common papilla of the gland was thick and long as reported in domestic chicken [4]. It was quadrilateral in duck [7]. The papilla was surrounded by skin with small feathers, which extended from posterodorsal end of the glands and was directed dorsocaudally as in chicken [4]. The secretion from the gland was reported to be removed by their beaks and spread over the plumage [5]. The axis of the papilla and the lobed almost lied in one line as in chicken [1]. The base of the papilla or isthmus was broader than the tip of the papilla. The common papilla contained a single duct, which conveyed secretions from both the lobes to the exterior. Similar results were found in fowl and Japanese quail [1]. Contrary to this, two separate ducts were present in the common papilla, in drongo [8] and in ducks [7], respectively.

The physical parameters such as the mean weight, length, width and thickness of the right and left lobes and the weight, length and width of the papilla are shown in Table 1.

Table 1: Various morphological parameters of uropygial gland (Mean ± SE) and their correlation in Beltsville small white breed of turkeys

S. No.	Parameters	Mean ± SE	Correlation coefficients of uropygial gland parameters to body weight
1	Body weight	7.01 ± 0.11 Kg	
2	Gland weight	0.93 ± 0.04 g	0.943**
3	Papilla weight	0.14 ± 0.01 g	0.854**
4	Right lobe length	0.97 ± 0.02 cm	0.287
5	Left lobe length	0.96 ± 0.02 cm	0.332
6	Right lobe width	0.86 ± 0.01 cm	0.238
7	Left lobe width	0.86 ± 0.01 cm	0.150
8	Right lobe thickness	0.57 ± 0.01 cm	-0.074
9	Left lobe thickness	0.51 ± 0.01 cm	-0.097
10	Papilla length	0.64 ± 0.01 cm	-0.310
11	Papilla thickness	0.47 ± 0.01 cm	0.240
12	Percent gland weight to body weight	0.01 ± 0.01	0.849**

** Highly Significant ($p<0.01$)

The two lobes were symmetrical whereas in ducks, the right gland was significantly longer, wider and thicker than the left [7]. The length of the papilla was two-third of the length of the lobe and the lobes were twice thicker than the papilla. However, Rajathi *et al*. [7] noticed that two uropygial glands in duck were asymmetrical. In white leghorn birds, the gland constituted 0.07 percentage of body weight [2] while in ducks 0.34 percentage [7] whereas in turkey it constituted only 0.01 percentage of the total body weight.

High significant positive correlation was noticed between body weight and gland weight (r = 0.943), body weight and papilla weight (r = 0.854) and body weight and percent gland weight (r = 0.849). Similar positive correlation between body weight and gland weight was found in ducks [7].

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