

RESEARCH PAPER

## Pathology of thyroid gland in buffaloes

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### ABSTRACT

The study was conducted on the gross and microscopic alteration in the thyroid gland of buffaloes. For the study, 250 thyroids of slaughtered buffaloes were collected randomly from MKR Frozen Food Export Pvt. Ltd., Nanded. Grossly the colour of thyroid gland was observed as dark brown (19.2%), faint pale (66.0%) and faint brown (14.8%), where as shape of thyroid gland was observed as oval (43.4%), elongated (14.8%) and triangular (41.8%). Among the pathological conditions, cysts were only the changes identified grossly. Histopathologically, colloid goitre and parenchymatous goitre were most common type of affections of the thyroid gland. However, combination was also not uncommon. The colour and shape of thyroid gland were not correlated with the pathological lesions of thyroid. Histologically, thyroid gland revealed colloid goiter (24.8%), parenchymatous goiter (5.2%), combination of colloid and parenchymatous goiter (6.8%), fibrosis (10.0%), lymphocytic thyroiditis (8.0%), cyst (2.4%) and congestion and hemorrhages (1.0%). On histochemical studies, PAS (periodic acid and schiff) positive material was observed in cyst. However, histological structure in 48.0% cases was found to be unaltered.

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Thyroid is the one of the most important endocrine glands in the body. It is the only tissue in the body, which is able to accumulate large quantities of iodine and incorporate it into hormone. Thyroid gland contains 70 to 80 % of the total body iodine and produces two main iodine containing hormones, thyroxin ( $T_4$ ) and triiodothyronine ( $T_3$ ) (Underwood, 1962). The main function of thyroid hormone is the control of the metabolic rate of the animal body by the regulation of cellular oxidation. The overall physiologic effect of thyroid hormone is to increase the total metabolic rate, stimulate new protein synthesis, increase lipid metabolism and convert cholesterol into bile acids and other substances. It stimulates the heart rate, cardiac output and blood flow. It also increases neural transmission and neuronal development in young animals.

Thus, any change in the function of thyroid gland brings about series of changes in the structure and chemical composition at their cellular level. Therefore, impairment of thyroids leads to numerous problems. The proper functioning of thyroid is considered as vital for proper growth, production, reproduction and other important processes of the body. Therefore, the present study was undertaken to study the incidence of spontaneous lesions, to note gross and microscopic changes and to record histochemical changes in the thyroid gland of buffaloes.

### MATERIALS AND METHODS

The study was carried out at Department of Veterinary Pathology, College of Veterinary and Animal Sciences, Parbhani during 2003-04. The thyroid glands of buffaloes aging 5 to 11 years were collected from MKR Frozen Food Export Pvt. Ltd., Nanded. During the period of observation, a total of 2200 buffaloes caresses were examined. From these, 250 thyroids were collected randomly on gross observation. These glands were brought to the laboratory and examined grossly for colour, shape and size. The collected glands were incised and gross lesions, if any, were recorded. Further, the tissue pieces from these glands were fixed in 10% neutral buffered formaline (pH 7). Tissues fixed in neutral buffered formaline were cut into pieces of small thickness and were processed routinely by paraffin (60° C with Ceresin, Quligens) embedding method and the blocks were prepared. Paraffin sections were cut at 3-5  $\mu$ m and stained by conventional procedures using haematoxylin and eosin (H and E) stains (Culling, 1974). For histochemical studies, tissues were fixed in 10% neutral buffered formaline. The tissue pieces were processed routinely by paraffin (60°C with Ceresin, Quligens) embedding method and paraffin embedded sections of 3-5  $\mu$ m thickness were obtained. Wherever necessary, special staining method PAS (Periodic Acid and Schiff) for demonstration of neutral polysaccharides were carried out (Singh and Sulochana, 1997).