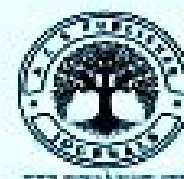


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Histological, Histochemical, and Histoenzymatic Study of Pituitary Gland in Dog and Its Role in Animal Health

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ABSTRACT

Objectives: This study aims to examine the histological, histochemical, and histoenzymatic structures of the pituitary gland in dogs, which has limited research on the gland in dogs and its activity when compared with previous research.

Methodology: The samples obtained were subjected to a histological and histochemical study of the pituitary gland, which was collected from five dogs. The samples were fixed and processed, and microscopically evaluated by using H&E stain, and some of the specific stains for histochemical observation (H&E, PAS, Alcian blue, Van Gieson stains) and alkaline phosphatase for histoenzymatic analysis.

Results: The pituitary gland was found to have a thin connective tissue capsule made of collagen and a few elastic fibers surrounding it histologically. The adenohypophysis and neurohypophysis were the two regions it had. The adenohypophysis (anterior lobe) consisted of Pars distalis with mean intermediate diameter of thickness thickness (187.68 μ m) and housing the large numerous acidophils and smallest size basophils, and light-stained Homophones. Pars intermedia (intermediate lobe) which was the smallest region with smallest value of diameter (55.9 μ m), had a stratified layer of round oval basophilic cells and squamous cells. Some of these cells extended to the pars nervosa for a small distance. The pars nervosa (posterior lobe) represented the highest value of diameter (279.5200 $\pm$ 38.96578 μ m) and was occupied by the neural tissue of the unmyelinated nerve fibers and various shapes of the pituicytes (glial cells) with acidophilic herring bodies. The collagen fibers stained red to brown in capsules, connective tissue with blood capillaries, and the elastic fibers stained black in colors with Van Gieson stains. The basophils differentiated from the acidophils by using the PAS and Alcian blue stains, which gave a positive reaction, while the acidophils gave a negative reaction. The cell membrane and cytoplasm of basophil cells in the Pars distalis showed exemplified alkaline phosphatase activity compared to the neurohypophysis.

Conclusions: The dog's pituitary gland was surrounded by a thin connective tissue capsule of collagen and elastic fibers, consisting of adenohypophysis and neurohypophysis, with the same subdivision as in the other animals, a prominent hypophyseal cleft, and the pars intermedia was closely attached to the pars nervosa. Pars distalis contained large, numerous acidophil cells, smaller basophil cells, and paler chromophobes. Well-developed Pars intermedia was the smallest region with basophilic cells, squamous cells, and chromophobe cells. Pars nervosa was the largest region, consisting of a network of unmyelinated nerve fibers and numerous pituicytes. The basophils gave a positive reaction, and acidophils gave a negative reaction for PAS and Alcian blue. The Alkaline phosphatase enzyme activity in the pars nervosa gave positive reactions more than in other regions. These results reflect the healthy condition of the animals' status.

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