

NS.VET.2

MACROSCOPIC AND MICROSCOPIC ANATOMY OF THE PITUITARY GLAND OF NILE TILAPIA (*Oreochromis niloticus*)

N. H. De Silva, I. P. G. H. U. Dissanayke, D. M. S. Munasinghe

*Department of Basic Veterinary Sciences,
Faculty of Veterinary Medicine and Animal Science, University of Peradeniya*

The pituitary gland of teleosts plays a key role in growth, development, reproduction and adaptation to environmental challenges, thus having major implications in aquaculture. The objective of this study was to document the microscopic and macroscopic anatomy of the pituitary gland of Nile Tilapia (*Oreochromis niloticus*) in Sri Lanka, as information on this subject is scarce.

Heads of six mature fish, which were fixed in 10% formal saline after euthanasia, were dissected and examined under a stereomicroscope to study the gross anatomy of the pituitary. To study microscopic anatomy, six euthanised fish were fixed in 10 % formal saline and decapitated. Two heads were placed in formol-sublimate for 24 hours. All samples were transferred to 12.5% EDTA for decalcification, and processed into paraffin wax, and 5 µm thick cross and saggital sections taken. The sections fixed only in formal saline were stained with haematoxylin and eosin and periodic acid Schiff (PAS)-orange G stains. Formol-sublimate fixed samples were placed in Lugol's iodine to remove mercuric precipitates and stained with orange G-acid fuchsin-light green and performic acid-alcian blue-PAS-orange G- acid fuchsin methods and observed under a compound microscope.

Macroscopically, the pituitary gland of Nile Tilapia was a whitish, ovoid structure with a median groove that divides it into two lobes. Histologically, the pituitary gland comprised cellular (adenohypophysis, AH) and neuronal (neurohypophysis, NH) areas. The NH extended along the long axis of the pituitary sending its branches to the AH throughout its length. The AH further divided into rostral pars distalis (RPD), proximal pars distalis (PPD) and pars intermedia (PI) based on cellular characteristics and arrangements. The RPD comprised two cell types. The prominent cell type (RPD-1) was acidophilic, irregular, large cells with large round or ovoid nuclei while the RPD-2 cells were basophilic, small, round or cuboidal cells with central nuclei. The PPD was composed of acidophilic, round, ovoid or columnar shaped cells (PPD-1) and basophilic, irregular shaped large cells (PPD-2) with central round nuclei. The PI contained acidophilic, ovoid or columnar shaped cells (PI-1) and basophilic, round or ovoid (PI-2) cells. Based on staining properties and cellular characteristics, RPD-1, RPD2, PPD-1, PPD-2, PI-1 and PI-2 cells were tentatively identified as prolactin, corticotrophic, somatotrophic, gonadotrophic, melanotrophic and somatolactotrophic cells respectively. The findings reveal that the pituitary gland of Nile Tilapia comprises NH and AH areas and contains six of the seven cell types reported in teleosts.