

**“Immunohistochemical localization of B-Endorphin
and Cholecystokinin (CCK) in the brain regions of
fresh water fish , *Wallago attu* (Bl. & Sch.)”**

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SUMMARY AND CONCLUSIONS

As teleost being a large group of fishes showing enormous diversity, it is important to uncover the underlying pattern of brain to determine the anatomical and functional correlation of its various parts. This study represents a useful tool for the precise localization of neuroendocrine territories and for the tracing of the neuronal systems participating in the regulation of various functions in the order-[Siluriformes](#).

In the present study an attempt has been made in understanding some of the major neuroanatomical loci and the neuroactive substances involved in the transduction of signals, feeding and reproduction in the olfactory system and forebrain of *Wallago attu*.

Nissl's staining technique in the present investigation is used to demarcate various neuronal groups and cytoarchitectonic areas in the forebrain of *Wallago attu*. In *Wallago attu* the telencephalic lobes are connected to each other by CG and AC and it is divided into two subdivisions: area ventralis telencephali (V) and area dorsalis telencephali (D). Area ventralis telencephali has been further divided into pre and post commissural areas. In *Wallago attu*, the dorsal (Vd), ventral (Vv) and lateral (Vl) division represent the main precommissural nuclei; the central (Vc) and supracommissural (Vs) nuclei located at the commissural and nucleus entopeduncularis (NE) is located at the post commissural area. The organum vasculosum laminae terminalis (OVL) is located in ventral wall of ventricle, which connects the two telencephalic hemispheres. The dorsal telencephalon consists of peripheral areas containing five relatively compact cell masses the medial part (Dm), the dorsal part (Dd), the lateral part (Dl), the posterior part (Dp) and the central part (Dc). Four subdivisions were recognized of Dm that are named sequentially in the order in which they appeared i.e., Dm1, Dm2, Dm3 and Dm4.

Dorsal part of Dd extends laterally to form the dorsal telencephalon (Dld), which contained compactly arranged, small and moderately stained neuron. It is divided into three major subdivisions: 1) a dorsal division (Dld), 2) a rostral ventral division (Dlv) and 3) posterior division (Dlp). Presence of the nucleus taeniae (NT) are located at the caudal telencephalon region is reported in the present study. POA of *Wallago attu* is an important region which constitutes major part of anterior forebrain. A dense aggregation of nuclei around the third ventricle was observed in *Wallago attu*. In the *Wallago attu*, the preoptic area are divided in to nucleus preopticus periventricularis dorsalis (NPPd), ventralis (NPPv), medialis (NPPm). In *Wallago attu*, periventricular zone of the anterior tuberal area consist of nucleus hypothalamicus dorsalis (NHd), nucleus hypothalamicus medialis (NHm) and nucleus hypothalamicus ventralis (NHv). Around the lateral recess, compactly arranged cells of nucleus recessus lateralis (NRL) is subdivided into nucleus recessus lateralis superior (NRLs) and nucleus recessus lateralis inferior (NRLi). In the present investigation NRLi intensely stained with cresyl violet.

In the present result CCK8-like immunoreactivity was not detected in the ORNs. Very sparse CCK8-like immunoreactivity was observed in the olfactory bulb. Surprisingly, CCK8-like immunoreactivity was completely devoid in the forebrain and pituitary of *Wallago attu*. This result is very different from other teleost, suggesting that CCK-8 may play a role in mediating transduction signal for feeding behavior. Intensely distributed pattern of CCK8-like immunoreactivity was observed in the intestine of same species, is one of the investigations carried out in this regard.

On the basis of investigations carried out in the present thesis, following conclusions are drawn:

1. Cytoarchitectonic studies will surely help in demarcating various neuronal groups from the olfactory system and forebrain of *Wallago attu*.
2. CCK was detected immunohistochemically in the forebrain and hypophysis of the species *Wallago attu*, suggesting that these peptides may be involved in the regulating different physiological functions, including reproduction, feeding, and other metabolic processes.
3. Lastly, this study demonstrates for the first time cytoarchitectonic study, localization and distribution of neuropeptides and neurotransmitter in brain of *Wallago attu*.