



The morphohistology and fine anatomy of the olfactory organ in pabda catfish, *Ompok bimaculatus* (Bloch, 1794)

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Abstract

The organization of the olfactory system in *Ompok bimaculatus* (Siluriformes: Siluridae) were investigated by histological and ultrastructural analysis. The nasal chamber was totally engrossed by a boat shaped elongated olfactory rosette with numerous lamella. Histomicroscopically, each lamella was comprised of central core bounded on both sides by the cellular elements of olfactory epithelium. The central core was composed of thick connective tissue, nerve fibres and blood capillaries. The cellular components of the olfactory epithelium were identified based on their staining vigour, architecture, structural characteristics and surface features. The sensory epithelium contained morphologically recognizable ciliated, microvillous and rod receptor neurons. Labyrinth cells, scattered lymphatic cells, secretory mucous cells, stratified epithelial cells bearing microfolds and condensed ciliated supporting cells were observed in the indifferent epithelia. The basal cells were submerged in the deeper zone of mucosa above the basal lamina. Different sensory and nonsensory cells of the olfactory lining were associated with chemical stimulation of the fish studied. This species acquires a well developed olfactory sense for exploring the aquatic environment and able to determine the chemical changes in the surroundings.

Key words: Butter catfish, Cellular constituent, Chemoreception, Microarchitecture, Olfactory mucosa

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Introduction

Olfactory sense is mediated to be the first range of chemosensory systems for behavioural adjustments. Olfactory system of fish has high sensitivity and selectivity permitting olfaction to function as distance chemical sense (Devitsina and Chervova, 1994). Smell is the considerable mediator of chemical communication and necessitated for various fish behaviour. Fish have well organized olfactory organs which play momentous role in food searching, predator detection, kin finding, nest locating, breeding sites recognition, reproductive and other behaviours (Farbman, 1994). The olfactory

sensitivity of teleosts has some peculiarities as olfaction occurs in an aquatic environment. Diversity exists with regard to the morphology of olfactory organs and cellular organizations in the mucosa. In teleostean fishes the structural peculiarity and function of olfactory apparatus is related to their ecological specificity and mode of life. Olfactory mucosa consists of a mosaic of sensory neurons, classified as ciliar, microvillar, rod and crypt receptor cells reported by many workers in teleosts (Diaz *et al.*, 2002; Hamdani *et al.*, 2008; Kuciel *et al.*, 2011; Mokhtar and Abd-Elhafeez, 2014; Ghosh, 2020). Appearance