

Research Article

Microscopic structure of the olfactory mucosa of onespot barb, *Puntius terio* (Cyprinidae: Smiliogastrinae)

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Abstract: Light microscopy and scanning electron microscopy were used to portray the cellular constituents lining the olfactory epithelium of teri barb, *Puntius terio* (Hamilton, 1822) (Cyprinidae: Smiliogastrinae). The olfactory organ holded 16 pairs of lamellae emitted from central raphe, consummate an oviform rosette. The multilamellar olfactory rosette was distinctively placed on the ground of nasal cavity and differentiated by specialized sensory and non-sensory territory. Sensory epithelium covered apical part and linguiform process of lamella while rest part is disguised by non-sensory epithelium. The sensory epithelium had two specific forms: ciliated receptor cells and microvillous receptor cells categorized by staining magnitude, texture and surface morphology. In divergence, the nonsensory epithelium was made up of stratified epithelial cells with microridges, cluster of ciliated non-sensory cells and secretory mucous cells. Basal cells were buried in the mucosa, presumed to be the progenitor of sensory or other supporting cells. Functional implication of cellular components on the olfactory lining was argued with feeding habits and behaviour of fish interested.

Keywords: Olfactory organ, Surface feature, Histoarchitecture, Chemical senses.

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Introduction

Olfaction of fish is one of the utmost imperative chemosensory pathways for finding and recognition of chemical cues in the surrounding habitat. This sensory channel of fish is precisely and steadily in contiguity with the alien aquatic environment. It is well enacted that the receptor cells lining the olfactosensory mucosa are competent to encounter the chemical changes in the around environment and concerned with essential performance. Smell allows the fish to spot and identify the food, recognize the sexual partner at breeding sites, locate nest, avoid enemies or predators and in numerous other approaches (Hansen & Reutter 2004). The structural characterization and role of the olfactory organs in teleosts have been previously portrayed by various workers (Hamdani & Døving 2007; Waryani et al.

2013; Masram & Baile 2014; Pashchenko & Kasumyan 2015; Kim et al. 2018; Ghosh 2019; Dymek et al. 2020). Olfactory lining consists of a mosaic of sensory receptor cells assorted between non-sensory cells, deviate in number among teleosts. The morphologically different types of receptor neurons are thought to interpose responses to distinct odorants (Meredith et al. 2012). Correlative morphological studies on the olfactory organ of various species of the genera *Puntius* have enlightened that disparity exists in the functional organization and specialization of sensory neurons (Chakrabarti & Ghosh 2010; Ghosh & Chakrabarti 2010; 2014; Ghosh et al. 2015). However, lacunae still occur in part of these survey related to functional characteristic of olfactory cells associated with mode of life and living of organism.