

Original Article

The olfactory mucosa of river catfish, *Eutropiichthys vacha* (Hamilton, 1822): a histochemical study

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Abstract: Miscellany in histochemical peculiarity of the olfactory mucosa was studied for localization of axons, mucopolysaccharides, glycogen, protein and lipid in schilbid catfish, *Eutropiichthys vacha* (Hamilton, 1822). Silver deposition was detected in the abundance of receptor cells in the olfactosensory epithelium and well as marked in the knob and dendrite process of primary receptor cells. The mucous cells with various stages of maturity containing different degrees of mucopolysaccharides were identified by employing the Periodic Acid Schiff's (PAS) reaction in combination with Alcian Blue (AB) test. This combined test imparted purple colour due to PAS for neutral mucin and blue colour for AB reaction due to the presence of acid mucin exclusively. The results of Best's carmine test indicated considerable amount of glycogen present in the receptor cells, basal cells and supporting cells in the olfactory mucosa. Basic protein and bound lipid were ascertained in the various cells of the epithelial lining and in blood cells of the central core were discussed with behavioural activities of the fish interested.

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Introduction

Olfaction is one of the most notable senses driving the basic types of behaviour in teleosts for communication with the aquatic environment. It is extremely important in fish participating in survival linked activities such as feeding, migrations, nest finding, reproductive strategies, parental behaviour and fright reaction to alarm substance (Camacho et al., 2010). Olfactory cues are ascertained by a pair of olfactory organs connected to the olfactory lobes of the brain and pertinent attitudes are released in any given species (Mana and Kawamura, 2002).

In recent years, a widespread attraction has been exhibited by researchers on morphology, structural organization and function of the olfactory organ to understand the mechanism of olfaction in teleosts. Cellular elements and their chemical constituents conceiving of the olfactory system are indispensable to annotation of olfactory function. Scanty studies have been made on histochemistry of the olfactory epithelium of fish (Singh and Singh, 1987; Pastor et

al., 1991; Saito et al., 2004; Bettini et al., 2009; Ghosh and Chakrabarti, 2012, 2015; Kim et al., 2019) to localize the chemical peculiarity in different cell types.

In view of the paucity of knowledge regarding the chemical nature and functional significance of diverse cells lining the olfactory mucosa of schilbid catfishes in relation to mode of life and living, the present work has been undertaken on *Eutropiichthys vacha* (Hamilton, 1822) (Actinopterygii: Siluriformes: Schilbeidae), a carnivore surface feeder which feeds on insects, crustaceans, rotifers, mollusks and small fishes (Talwar and Jhingran, 1991; Nath, 1994).

Materials and Methods

Sample collection: A total of 24 adult specimens of both sexes *E. vacha* (measured 22±2.07 cm in total length) were captured from the river Ganga around Kalyani, West Bengal throughout the year 2018. The specimens were deeply anaesthetized with benzocaine (4 mg/L) and the olfactory organs were carefully

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