A NOTE ON GROSS MORPHOLOGY OF THE ALIMENTARY CANAL OF A HILL-STREAM FISH, *SCHIZOTHORAX RICHARDSONII*

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The study showed that the mouth of the fish, *S. hizothorax richardsonii* is ventral in position having thick stony pad like lower jaw. The alimentary canal is simple and divided into five distinct parts namely, the buccopharynx without teeth, oesophagus, intestinal bulb, intestine and rectum. There are no valve like structures demarcating the different parts of the alimentary canal.

As *Schizothorax richardsonii* is a herbivorous and bottom feeder hill-stream fish of Garhwal Himalaya, the present investigation was made to study the gross morphology of the alimentary tract of this fish.

The fishes from the river Yamuna running through Naugann, Uttarkashi-Garhwal (situated at a height of 1372 m) were collected, fixed in 8% formalin and brought to the laboratory. Fishes were dissected out with a view to study the gross morphology of the alimentary tract.

In fishes, the position of mouth and its modifications are supposed to help in the capture and retention of food and can well be correlated with the type of food taken, which governs the make up of the alimentary canal and also the physiology of digestion. Agarwal and Bala for Munil and Verma et al. for *Gudusia* suggested that these fishes are plankton-feeder and therefore, a device for capturing the prey is unwanted; and as a result, the teeth are almost absent. During present study it was observed that teeth are absent in the buccopharyngeal region as an adaption to herbivorous nature of *S. richardsonii*.

The digestive canal constitutes a straight tube from mouth to anus in some fishes. But, generally the canal makes loops and is structurally divided into functionally different parts. Thus, oesophagus, stomach and intestine and often sub-division of these can be
usually well distinguished. The oesophagus may terminate in a cardiac sphincter or valve as in *Laboe* and in stomachless fishes it enters the intestine directly. The intestine may be short and straight or thrown into folds or loops in teleosts. Its length varies from one fifth to twenty times the body length and is longest in microphagus and herbivorous fishes. The terminal part of the intestine is differentiated as a 'rectum', often demarcated from the intestine by an ileo-rectal valve largely formed by smooth muscles as in *Gadus and Gambusia*, but in many species the valve is absent. During present study, it was observed that the alimentary canal of *S. richardsonii* is about four times longer than the body length of the fish. The mouth of the fish is ventral in position having thick stony pad-like lower jaw (Fig. 1 a). The buccopharynx is without teeth and opens into the oesophagus. The latter is straight tube which opens posteriorly into the intestinal-bulb. The intestinal-bulb is a short and swollen structure, with a thicker wall than that of intestine. This bulb opens into thin walled and long intestine. The intestine forms several coillings and opens into the rectum which is well demarcated, short, thin walled and slightly wider than the intestine. The rectum finally opens outside through the anus. No valve like structures demarcate the different parts of the alimentary canal. (Fig. 1 b).

Das and Pathani observed that the position of the bile duct is an important criterion in deciding whether the fish has intestinal bulb or stomach and also the food of the fish. In *Tor pituita* (omnivorous), they observed that the opening of bile duct is at one third length from the anterior end (from the junction of oesophagus and intestinal bulb). The significance of this can be that it is a transitional stage between herbivorous and carnivorous condition. In carnivorous fish, the bile duct shifts more towards the posterior end of stomach. The present study showed that the bile duct in *S. richardsonii* (Fig. 1 b) is shifted towards the oesophagus (anterior end) and an intestinal-bulb is present in place of stomach due to its herbivorous nature.

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*Fig. 1*: a–Position of mouth of *S. richardsonii*, b–Alimentary canal of *S. richardsonii*.

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REFERENCES


