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ULTIMOBRANCHIAL BODY OF FRESWATER CATFISH *HETEROPNEUSTES FOSSILIS*

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RESUMO: O presente estudo refere-se aos detalhes do corpo ultimobranquial de *Heteropneustes fossilis*. A glândula está localizada no intersepto entre as cavidades pericárdicas e abdominais. A glândula geralmente consiste de um parênquima sólido o qual é composto de cordões celulares. Algumas vezes, foram vistos também foliculos.

ABSTRACT: The present study deals with the histological details of the ultimobranchial body of *Heteropneustes fossilis*. The gland has been located in the interseptum between the pericardial and abdominal cavities. The gland usually consists of a solid parenchyma which is composed of cell cords. Sometimes, follicles have also been seen.

INTRODUCTION

The ultimobranchial body (UBB) of fishes is known to be a rich source of calcitonin (CT) (ROBERTSON, 1986) CT is a major hypocalcemic hormone in mammals, but there is considerable disagreement regarding the physiological role of this hormone in fish, as hypocalcemia (LOUW *et al* , 1967; CHAN *et al.*, 1968, BRADSHAW and SUTTON, 1970; LOPEZ *et al* , 1971, 1976: PEIGNOUX-DEVILLE *et al* , 1975; WALES and BARRETT, 1983; WALES, 1984; FOUCHEREAU - PERON *et al* , 1987), hypercalcemia (GLOWACKI *et al* , 1985; FOUCHEREAU - PERON *et al* , 1987) and no effect (HAYSLETT *et al.*, 1971; PANG, 1971, 1973; ORIMO *et al*., 1972; COPP and MA, 1978; YAMAUCHI *et al.*, 1978; WANDELAAR BONGA, 1980; SRIVASTAV and SWARUP, 1980; HIRANO *et al* , 1981; FENWICK and LAM, 1988; SRIVASTAV *et al.*, 1989) have been reported after calcitonin administration to fish. In the present study, we have reported the histological details of the UBB of *Heteropneustes fossilis*.

MATERIALS AND METHODS

Adult fish, *Heteropneustes fossilis* were collected and the area adjoining the heart along with the oesophagus were extirpated and fixed in aqueous Bouin s fluid. Tissues were routinely processed in graded series of alcohols, cleared in xylene and embedded in paraffin wax. Serial sections were cut at 4-6 µm and stained with HE (hematoxylin-eosin)

RESULTS

The ultimobranchial body of *H. fossilis* exists in the interseptum between the pericardial and abdominal cavities (Fig 1) It is not visible with naked eyes but can be detected in the serial sections of the interseptum. The gland is enveloped by thick connective tissue sheath (Fig. 1) which is penetrated by blood capillaries. Occasionally, the gland is embedded within the oesophageal musculature. Usually, there exists a single patch of UBB but sometimes two or more patches have also been observed.

The UBB usually consists of a solid parenchyma which is composed of cell cords (Fig. 2) Sometimes, follicles have also been seen (Fig. 3) All the cells are alike. Their cell boundaries are indistinct When stained with H/E, the cytoplasm of these cells are noticed slightly eosinophilic. The nuclei are generally vesicular in shape (Fig. 2)

DISCUSSION

In *H. fossilis* the UBB is located in the interseptum between the pericardial and abdominal cavities. Similar position of the gland has been reported earlier by KRAWARIK (1936), SEHE (1960), OGURI (1973), TAKAGI and YAMADA (1977), YAMANE (1978), ZACCONE and LO-CASCIO (1979), ZACCONE (1980) and SRIVASTAV (1983) However, in *Notopterus notopterus* (SWARUP and AHMAD, 1979) and *Mystus vittatus* (SWARUP and AHMAD, 1983) the gland has been noticed between the oesophagus and sinus venosus.

The UBB of *H. fossilis* is a compact structure comprising clusters of cells. OGURI (1973 - goldfish), TAKAGI and YAMADA (1977 - crucian carp), ZACCONE and LO-CASCIO (1979 - *Mugil cephalus*), ZACCONE (1980 - *Symphodus ocellatus*) and SRIVASTAV *et al.*, (1989 - *Clarias batrachus*) have also reported similar structure of the gland A follicular structure of the UBB has been reported from *Squalus acanthias* (CAMP, 1917), carp (SEHE, 1960), *Carassius auratus* (ROBERTSON, 1967), shark (COPP, 1969), *Salmo*

gairdneri (ROBERTSON, 1969), Zebrafish (YAMANE, 1978), *Notopterus notopterus* (SWARUP and AHMAD, 1983) EGGERT (1938) and OGURI (1973) have reported that the cellular pattern of the UBB is changeable corresponding to the glandular activity.

The UBB of *H. fossilis* contains a single cell type, similar to observations that have been made by SRIVASTAV *et al.*, (1989) on *Clarias batrachus*. This is in contrast to the observations on certain other species of fishes where more than one cell types have been noticed - two cell types (in eel - PEIGNOUX - DEVILLE *et al.*, 1975; in *Salmo gairdneri* - HOOKER *et al* , 1979; in *Notopterus notopterus* SWARUP and AHMAD, 1979; in *Mystus vittatus* SWARUP and AHMAD, 1983) or even three cell types (in *Carassius carassius* - TAKAGI and YAMADA, 1977)

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Fig. 1 Photomicrograph of ultimobranchial body (UBB) of *H. fossilis* showing its position in the interseptum between the pericardial and abdominal cavities. Note the thick connective tissue sheath (CT) wehich envelops the gland. HE x 40.

Fig. 2. Ultimobranchial body of *H. fossilis* showing parenchyma which is composed of cell cords. HE x 400

Fig. 3 Ultimobranchial body of *H. fossilis* exhibiting follicles (F) and cell cords (CC) HE x 200.

Ultimobranchial body of freswater catfish