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SUSTAINABLE MANAGEMENT OF AQUATIC RESOURCES

PART-I

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COMPARATIVE HISTOLOGICAL STUDY OF ENDOCRINE PANCREAS IN *LABEO ROHITA* (HAMILTON, 1822), *MYSTUS CAVASIUS* (HAMILTON, 1822) AND *NOTOPTERUS NOTOPTERUS* (PALLAS, 1769)

Saroj Kumar Ghosh and Padmanabha Chakrabarti

ABSTRACT

Pancreas, a key organ of teleosts which controls many life functions and plays a momentous role in physiology. The cellular characteristics and disposition of endocrine pancreas were investigated in *Labeo rohita* (Hamilton, 1822), *Mystus cavasius* (Hamilton, 1822) and *Notopterus notopterus* (Pallas, 1769) using histological techniques. The structural analysis showed that in *L. rohita*, endocrine pancreatic tissues were diffused within the adipose tissues in between the intestinal coiling while in *M. cavasius* the discrete pancreatic tissue attached with stomach wall along with exocrine part. However, in *N. notopterus*, the pancreatic tissues were sandwiched in between the pyloric caeca and also adhered to the wall of stomach in distal region. Cytoarchitectural analysis demonstrated that the endocrine components of all the three species were enclosed in a thin capsule provided with α, β and δ cells, interspersed with blood sinuses. Various cell types in the islet of Langerhans were differentiated based mainly upon their shape, position, staining intensity and density of the cytoplasmic secretory granules. Histological analysis showed that β cells were usually grouped in clusters, typically stained with Aldehyde fuchsin (AF), Heidenhain's azan (HA) and Mallory's triple (MT); observed in the central areas of the islets. α cells were usually arranged either in groups or scattered to the islets periphery, ovoid in shape. Lightly staining δ cells were founded at a low frequency, scattered anywhere in the pancreatic islet and exhibited moderate cytoplasmic granules in *L. rohita*, *M. cavasius* and *N. notopterus*. Despite being the subject of extreme controversy, the nature and function of different endocrine cells were discussed.

Key words: Cellular architecture, Endocrine pancreas, *Labeo rohita*, *Mystus cavasius*, *Notopterus notopterus*

INTRODUCTION

In lower vertebrates particularly in fishes, the pancreas exhibits a great diversity in structural modification and also in distributional pattern. As in other vertebrates, the