HISTOCHEMISTRY OF LIVER AND PANCREAS IN A CARP FINGERLING, CATLA CATLA (HAMILTON)

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ABSTRACT

In Catla fingerlings, the hepatic cells have two types of nuclei—round and oval, and phagocytes similar to those of mammalian liver are present. Histochemical localisation of bile reveals that it is present in the same cells that store glycogen, but bile is not present in all the glycogen-storing hepatic cells.

In pancreas the exocrine and the endocrine portions are completely separate from each other. The acinous exocrine cells lie dispersed in the liver, while the endocrine cells are attached to the intestine. The latter are differentiated into three types—\( \alpha \) and \( \beta \), as in most other vertebrates, and a D-type discovered by the author here, has so far been reported only in higher vertebrates.

INTRODUCTION

While extensive studies have been made on the anatomy and histology of the alimentary canal in adult teleosts, little intensive investigation, if any, has hitherto been undertaken on the histology and histochemistry of the digestive glands in fry or fingerlings. Of the important authors who dealt with the digestive glands along with the alimentary canal, mention may be made of Sarbahi (1940) on Labeo rohita, Kapoor (1953) and Sinha (1958) on Wallago attu, Pillay (1953) on Mugil tade, and Sarkar (1959) on Mystus seenghala.

The pancreas has been investigated by Hill (1926) in vertebrates and by Macallum (1884, 1886) and Kristal (1946) in a large number of fishes. Smallwood and Derrickson (1934) traced the development of liver, pancreas and spleen in Cyprinus carpio.
Histochemistry of Liver and Pancreas in Catla catla

In the present paper the author has studied the liver and pancreas in the fingerling of Catla catla (Hamilton), both histologically and histochemically.

**Material and Methods**

The fingerlings were collected from a nursery pond, Katara, Agra, during the monsoons of 1964 and ranged from 26.0 mm. to 67.0 mm. standard length. The disposition and relative positions of the organs were studied under a dissection binocular microscope. The fingerlings were sorted out into two groups for histological and histochemical studies. One of these groups was fed regularly each day, while the other was starved. Tissues from both the groups were fixed in 10 per cent. formalin, Bouin’s fluid, or absolute alcohol, and sections were cut 4–7μ thick and stained with Haematoxylin-eosin and Mallory’s connective tissue stains. The histochemical observations were made by staining the liver sections with Best’s carmine, periodic acid Schiff’s (PAS) and Steins iodine (Pearse, 1953), and the pancreas sections with Gomori’s chromium Haematoxylin phloxine stain (Gridley, 1953).

**Observations**

**Anatomy**

The liver in the Catla fingerling is a fairly large pink organ with right and left lobes, united anteriorly over the oesophagus so as to form a bridge-like median lobe. The right lobe is larger; it extends posteriorly into the abdominal cavity where the coils of the intestine are embedded in the hepatic mass. A common bile duct comes out of the liver mesially, and extending forwards opens at the anterior end of the intestinal bulb by minute hepatic ductules, while another duct goes to the gall bladder which lies between the right lobe and the intestinal bulb.

The pancreas in the Catla fingerling is rather inconspicuous and requires careful detection under the binocular microscope. It is lobular in structure and is attached at the middle region for a short length to the coils of the intestine.

**Histology and Histochemistry**

The hepatic cells are polyhedral, with prominent nuclei, and are arranged in cords, between which are interspaces (sinusoids) containing a few phagocytes, stained very lightly as compared to the hepatic cells. A conspicuous feature