

## Skin histochemistry of fresh water cat fish, *Clarias batrachus*

B. LAXMA REDDY AND G. BENARJEE

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See end of the article for authors' affiliations

Correspondence to :

**B. LAXMA REDDY**

Fisheries Research Lab,  
Department of Zoology,  
Kakatiya University,  
WARANGAL (A.P.) INDIA  
Email : drblaxmareddy@yahoo.  
co.in

### ABSTRACT

The skin of freshwater catfish (*Clarias batrachus*) is scaleless and is composed of outer epidermis and inner dermis layers. The epidermis contains mucous, tastebuds, granular and pigment cells. The dermis contains blood vessels and lymphatics. The scaleless skin secretes large amount of mucous containing glycoproteins. The present study deals with the histochemical nature of the skin.

**Key words :** *Clarias batrachus*, Skin, Histochemistry

The skin applies specially to the external layer of the body which forms a covering for the underlined structures. It has been recognized as a very important organ and as a highly functional inter-communicating and inter-relating media, which mediates an internal relationship of the organisms with its environment. The skin acts as a barrier between other tissues and the external environment. Modifications of the integument serve as an exoskeleton in many vertebrates. In warm blooded forms, the skin is associated internally with the regulation of body temperature. The hypodermal portion of the skin often serves to store reserve fatty substances. It also acts as receptor organ.

Structurally the skin of *Clarias batrachus* is scaleless and it is formed by two distinct layers, the epidermis and dermis. The epidermis is an outer layer, which is non-vascular, formed by stratified epithelium consisting of several layers of epithelial cells. These cells include flattend epidermal, mucous, club, taste buds, granular and pigment cells. Among these cells, the mucous which lubricates the scaleless skin, secretes large amount of mucous containing glycoproteins.

Among the various fishes studied, it has been observed that the scaleless fishes produce comparatively large quantities of mucous. The epidermis of these fishes show the presence of two or more types of specialized mucous cells in addition to the epidermal cells. But the epidermal cells secrete only small quantities of mucous.

This hypothesis was suggested by Van Oosten (1957). According to him the fish with scales have less number of mucous glands.

The other cells of the epidermis such as club cells distributed in the middle and basal part of the epidermis, the pigment cells are placed parallel to the basement membrane and taste bud cells which are comparatively few in number and sensory in nature. The dermis is formed by stratum spongiosum and stratum compactum which are richly supplied with blood vessels and lymphatics.

### MATERIALS AND METHODS

The fish, *Clarias batrachus* for the present study were procured locally and were sacrificed by cervical dislocation. The skin was removed and cut into small pieces then they were preserved in various fixatives *i.e.*, Bouin's, Susa, Carnoy and Zenker's fluid. After the routine histological preparation of the tissue, the sections of 5 $\mu$ m thickness were cut on rotatory microtome. To study the normal histology of the skin Heidenhain's Azan (Gurr, 1974) stain was used. A battery of histochemical tests (Pearse, 1968; Bancroft, 1975) were applied on the microtome cut sections of skin to elucidate the chemical nature.

### RESULTS AND DISCUSSION

The histochemical techniques employed in the present study to determine the chemical nature of the skin revealed that the skin of *Clarias batrachus* contained moderate amount of carbohydrates, proteins, lipids and nucleic acids. The two important layers epidermis and dermis have responded positively to various histochemical reactions. In the epidermis the mucous cells demonstrated

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