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"ULTRASTRUCTURE OF THE SKIN OF THE TREE FROG" Polypedates leucomystax

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ABSTRACT:-

Amphibians live in varied habitats. This fact probably explains the great morphofunctional diversity in their skins Although the integument is the structural and functional interface between the organism and its environment, the morphological and complexity of amphibian skin is not fully understand. There is practically no information on the integument of the tree frog Polypedates leucomystax found in cherrapunjee. Therefore, ultra structure of the skin of the adult frog of Polypedates leucomystax was studied during the breeding phase with the help of transmission electron microscopy. Adult males and females of Polypedated leucomystax were collected from the study sites at Cherrapunjee. The epidermis consisted of four layers namely, stratum cvornum, stratum granulosum, stratum spinosum and stratum germinativum. Desmosomes, ribosomes, tonofilaments. Golgi bodies, vacuoles and collagen fibres were observed in the epidermal cells. The basement membrane composed of collagenous fibres separated the epidermis from the dermis. Pigment cells like pterinosomes, melanophores and iridiphores were absorved and these pigment cells may work together to determine the varied skin colouration and patterns displayed in *polypedutes leucomystax* and my have important roles in adapting this frog to its environment.

Keyworeds: *polypedates leucomystax*; epidermis; pigment cells.

Introduction

Amphibians live in varied habitats. This fact probably explains the great morphofunctional diversity in their sk9ins. Amphibian skin is morphologically, biochemically and physiologically complex organ, which performs a wide range of functions (chemical

defense, ion transport necessary for the amphilbian's survival. Tjhere are seceral reports on details structure including its ultrastructure and functions (3,4,5,6,7,8). Compared with other vertebrates, amphibian skin is quite permeable to water, ions and gases, though considerable variation occurs among different species ant at different times and conditions in the same animal. Most amphibians are poorly adapted to a strictly terrestrial life. Amphibian skin interacts with biotic and abiotic factors in their environment, but it does not in general seve as a barrier to the inward or outward flow of water to and from amphibian bodyl.

The skin of amphibian is generally described as being naked due to the absence of the covering of scales, feathers or hair characteristics of most other histological studies of the amphibian integument by Rabl(11) and Elias and Shapiro (12) have shown that the epidermis varies in thickness and may have projections or indentations and that there are elevations and thickenings of various kinds in the dermis, especially in anurans. Skin thicknes and the number of epidermal skin layers vary in species specific manner. One species will also vary from another in the process of karatinization. These characteristics are related to environment – aquatic or terrestrial (13). Amphibians have diverse pigmentary patterns that include spots, stripes and mottles of various colours that can provide them either a cryptic or aposomatic colouration in their environment. It is well known that skin colouration is brought about by the interaction of the three kinds of chromatophores – xanthophores (erythrophore), iridophores and melanophores (14,15,16,17,18,19).

2. METHODOLOGY :

To study the untrastructure of the skin of polypedates leucomystax, adult males and females were collected from cherrapunjee, East Khasi Hills, Meghalaya, during the breeding season. The collected adult frogs were anesthesized and the sections of the skin from the dorsal and ventral parts of males and females were processed for transmission elecltron microscopic studies.

The skin sections of the dorsal and ventral parts taken form both male and femal frogs during the breeding period were fixed in 2.5% gluteraldehyde (prepared from 0.1M Na-cacodylate buffer) at $4^0$0 for 1hour.

3.RESULTS :

The electron micrograph of the skin of mle and female of polypedates leucomystax revealed that the epidermis consisted of four layers of epithelial cells namely stratum corneum.

Stratum granulosum, stratum spinosum and stratum germinativum. The stratum cornum, which is the outer mot layer was thickened and keratinized and consisted of a single layer of flattened cells. Protuberances on the outer surface of the epidermis were also observed.

The keratinized stratum conrmeum was separated from the underlying stratum granulosum by intercellular spaces. In the stratum granulosum some cells had prepared to move the the stratum corneum, as stratum corneum sloghed or shed periodically and have tyo be replaced. Tonofilamnets and desmosomes were seen in the epidermal layers following the stratum granulosum was the stratum spinosum and stratum germinativum. Cells of different shapes with prominent nucleus were observed in the stratum spijnosum and stratum germinativum of polyedates leucomystax. These cells withprominent nucleus were joined together by desmosomes.

4. DISCUSSION :

The epidermis of polypedates leucomystax consists of a number of layer, which are similar to the other amophibians. Since polypedates leucomystax is adapted to arboreal mode of life, the outer most layer of the epidermis, the keratinized stratum corneum with little recognizable ultrastrucure may be related to their terrestrial adaptation, as it has been suggested that keratinizaton of body epidermis may be a crucial adaptation for terrestrial life.

5. CONCLUSION :

On the basis of the present findings it may be concluded that the ultrastructure of the skin of polypedates leucomystax was similar to other amphibians. The epidermis was composed of four layers. The outermost layer the stratum corneum was keratinized which may be related to their te4rrestrial adaptation.

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