

HISTOLOGICAL DESCRIPTION OF THE BORNEAN HORNED FROG *Megophrys nasuta* (AMPHIBIA: ANURA: MEGOPHRYIDAE) SKIN STRUCTURE FROM DIFFERENT BODY REGIONS

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ABSTRACT

Skin is the first protection barrier for the frog species that protect them from high temperature, chemical toxics, and over exposure to sunlight. Thus variation in skin characteristics might reflect their adaptation to environment. Since leaf litter frogs are facing threats of habitat fragmentation, we investigate the skin structure of the Bornean leaf litter horned frog *Megophrys nasuta*, from different body regions. Histological analysis of the frog skins and slide preparations using Haematoxylin and Eosin staining protocol were employed. Findings indicated that all body regions of *M. nasuta* skins have similar characteristics of the strata, epidermis and dermis layers. However, thickness of the epidermis layer and glands distribution varies between dorsal and ventral (areas that were first in contact with the environment) thus suggesting their adaptation strategy. The observed distributions of serous and mucous glands on different skin regions might also reflect the habit of this species in their natural habitat. These results may help in understanding the function of the skin structure to meet their ecological needs especially in the changing environment at fragmented area. The data should be extended and explored to study the effects of habitat fragmentation on the amphibians.

Key words: Skin histology, leaf litter, *Megophrys nasuta*, skin properties, habitat change

INTRODUCTION

Amphibian skin properties play an important role to retain all the functional activities of the frog skin which work in a concert with cardiac and respiratory systems. Epidermis thickness, dermis layer, distribution and number of glands determine the susceptibility of the frogs towards their changing environment. Most common glands found in anurans are mucous, serous, and seromucous glands. The serous or granular gland secretion contains toxin which is fatal to prospective predators and against microorganisms on the skin surface, while the mucous gland prevents the skin from water lost and

act as a chamber for gas exchange. Habitat loss and fragmentation are among major threats to the highly sensitive, permeable skin of frogs especially forest dweller species (Seebacher & Alford, 2002). Cutting down trees and conversion of land for other plantation activity, indirectly altered the canopy cover and density of leaf litter on the ground (Marsh & Spearman, 1997; Seebacher & Alford, 2002; Bell & Donnelly, 2006). Leaf litter frogs are considered as among the most threatened species facing this great threat in the wild. Dixo and Martins (2008) showed that there is no significant difference between species diversity of leaf litter frogs and forest edges effect at the rainforest of Brazilian Atlantic due to the impact of forest fragmentation. However, there is a small impact of fragmentation

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