

Comparative Microanatomical Structure of Gills and Skin of Remainers and Skippers from Gunung Kidul Intertidal Zone

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ABSTRACT

One type of adaptation needed in fish that live in Intertidal Zone is morphological adaptation. When the tide is low, oxygen circulation in this area is limited, causing tidepools that occurred during this time are hypoxic for species that live inside. This research aimed to study the microanatomical structure of respiratory organ of two groups of fish that live in tidepools. One group is remainers which stay inside the pools during low tide, while the other is skippers, group of fish that have an ability to move outside water when it's needed. This research also aimed to investigate whether skin of these species can be used as respiratory surface to overcome hypoxic condition.

Two species of fish (*Bathygobius fuscus* of remainers group and *Blenniella cyanostigma* of skippers, respectively), were caught and sacrificed, then gills and skin of them were harvested. The organs then undergone further processing for microanatomical preparation with paraffin method and Hematoxylin-Eosin staining. Microanatomical structure of gills and skin then analysed descriptively. Gills were observed to study whether additional structure is presence and modification (in structure of epithelial cells and/or the length of secondary lamellae) is occurred as part of morphological change to absorb more oxygen during low tide. In Skin, the thickness of epidermal layers were measured and the number of blood capillaries were counted to investigate whether skin can be used as additional respiratory surface. Quantitative data of skin and gills were statistically analysed using Student's T-test.

Results showed that there were no differences in gills structure between remainers and skippers. Additional structure in gills were absent in both species. However, quantitative measurements in skins showed that skippers have less layers of epidermal cells and high number of blood capillaries compared to remainers skin. This results indicated that skippers were able to use their skin as additional respiratory surface outside gills.

Kata Kunci: *Gills, Intertidal zone, Microanatomical structure, Remainers, Skin, Skippers.*