

**Sifera Anggita Eridianti, 2020. Komparasi Struktur Histologi dan Ultrastruktur Podia pada Teripang *Phyllophorus sp* dan *Colochirus quadrangularis*. Skripsi ini dibawah bimbingan Dr. Dwi Winarni, M.Si. dan Dr. Listijani Suhargo, M.Si. Departemen Biologi, Fakultas Sains dan Teknologi, Universitas Airlangga, Surabaya.**

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### ABSTRAK

Tujuan penelitian ini adalah untuk mengetahui perbandingan struktur histologi dan ultrastruktur papila dan *tube feet* teripang *Phyllophorus sp* dan *Colochirus quadrangularis*. Masing-masing 5 sampel teripang *Phyllophorus sp* dan *Colochirus quadrangularis* yang diambil dari Selat Madura, diawetkan pada larutan fiksatif NBF. Pembuatan sediaan histologi diawali dengan dekalsifikasi dinding tubuh menggunakan larutan EDTA 13% hingga cukup lunak. Kemudian sampel masuk ke pembuatan sediaan histologi yang meliputi tahap *processing*, *embedding*, *sectioning* dan *affixing*, serta *staining*, kemudian sediaan diamati menggunakan mikroskop binokuler. Untuk pengamatan ultrastruktur, sampel yang telah difiksasi masuk ke tahap preparasi, *coating*, dan pengambilan foto ultrastruktur menggunakan mikroskop elektron (SEM). Data hasil pengamatan dibandingkan antara papila dan *tube feet* intraspecies, kemudian dibandingkan antara papila dan *tube feet* interspecies. Variabel yang diamati pada penelitian ini meliputi bentuk podia, adanya struktur kutikula, bentuk epitel podia, struktur *water vascular system*, letak daerah padatan osikula pada papila, jaringan ikat padat pada papila, bentuk osikula, ukuran tinggi papila, ukuran diameter papila, ukuran ketebalan otot papila, kerapatan papila. Hasil pengamatan menunjukkan adanya perbedaan struktur yang teramati secara histologi dan ultrastruktur pada bagian papila dan *tube feet* masing-masing spesies dan terdapat perbedaan pada papila dan *tube feet* jika dibandingkan antar spesies. Kesimpulan yang didapat pada penelitian ini yaitu (1) pada papila dan *tube feet* *Phyllophorus sp* berbeda dalam hal bentuk papila (papila bentuk SFNS, *tube feet* bentuk FNS), bentuk epitel papila (epitel papila pipih-columnar pendek, epitel *tube feet* columnar), serta perbandingan kerapatan papila (papila lebih rapat). (2) Pada papila dan *tube feet* *Colochirus quadrangularis* berbeda dalam hal bentuk papila (papila bentuk PNS, *tube feet* bentuk FNS), letak daerah padatan osikula (papila membentuk pyramid, *tube feet* mendekati permukaan luar tubuh), perbandingan pengukuran ketinggian (papila lebih tinggi), diameter (papila lebih lebar) dan kerapatan papila (*tube feet* lebih rapat). (3) Jika kedua spesies dibandingkan maka terdapat perbedaan pada bentuk papila, bentuk epitel papila, letak daerah padatan osikula pada papila, jaringan ikat padat pada papila, bentuk osikula, perbandingan ukuran tinggi, diameter dan kerapatan papila.

Kata Kunci: *Colochirus quadrangularis*, papila, *Phyllophorus sp*, *tube feet*, ultrastruktur

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### ABSTRACT

The purpose of this study was to compare the histological and ultrastructural structures of the papilla and tube feet in two sea cucumber species *Phyllophorus sp* and *Colochirus quadrangularis*. Five samples of *Phyllophorus sp* and *Colochirus quadrangularis* samples were collected from Madura Strait and preserved in NBF fixative solution. The histological preparations started with decalcification of the body wall using 13% EDTA solution until the samples were quite soft. Then decalcified samples were then subjected to several steps of histological preparation, including processing, embedding, sectioning, affixing, and staining. The processed tissue samples were then observed using a binocular microscope. For ultrastructural observations, the fixed samples were prepared and coated, then ultrastructural photos were taken using an electron microscope (SEM). Structural observation and comparison of papilla and tube feet were performed for papilla and tube feet within the species and between the species. The variables observed in this study include shape of podia, presence of the cuticle structure, shape of the epithelium of podia, the structure of the water vascular system, the location of the ossicular solids on podia, dense connective tissue on the podia, shape of the ossicle, the height of the podia, the diameter of the podia, the thickness of the podia's muscles, and the density of the podia. The results showed structural and ultrastructural differences between the papilla and tube feet both within and between the species. The conclusions obtained in this study are (1) the papillae and tube feet of *Phyllophorus sp* have distinct podia shape (SFNS-shaped papillae, FNS-shaped tube feet), podia epithelial shape (short flat-columnar papillae epithelium, columnar tube feet epithelium), and podia density ratio (closer papillae). (2) The papillae and tube feet *Colochirus quadrangularis* differ in the shape of the podia (papillae form PNS, tube feet form FNS), the location of the ossicular solids (papillae form a pyramid, the tube feet approach the outer surface of the body), the ratio of height measurements (papillae is higher), papillae diameter (papillae is wider), and density of podia (closer tube feet). (3) If the two species were compared, there are differences in the shape of the papilla, the shape of the papilla epithelium, the location of the solid area of the ossicles on the papilla, the dense connective tissue on the papilla, the shape of the ossicle, the ratio of height, diameter and density of podia.

Keywords: *Colochirus quadrangularis*, papilla, *Phyllophorus sp*, tube feet, ultrastructural.