

An ultrastructural study of the digestive tract of *Saccostrea palmula*, (Carpenter, 1857).

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Saccostrea palmula (oyster mangrove) is an important biological species. This oyster is distributed from Laguna San Ignacio, Baja California, México to Panama and Galapagos Islands, Ecuador. The studies on the shell, the soft tissues as well as the ecology inherent to each species, constitute solid bases for their knowledge and taxonomic definition. One of the main characteristics that express a significant adaptation at genus and species levels constitute the anatomic description of the digestive systems. Presently, the exact taxonomic position of this species, which belongs to ostreidae family is unclear. For better understanding the taxonomy, biology and ecology of this mollusk, we analyzed the ultrastructure of the digestive system. The oysters were collected from San Carlos Port, Magdalena Bay in Baja California Sur, México. The shells were opened and 2 mm sections were taken from different parts of the gut (palps, mouth and esophagus). Fixed in 2.5% glutaraldehyde in seawater, pH 8.0, post-fixed in 1% osmium tetroxide and processed for electron microscope. Fine sections were stained with uranyl acetate and lead citrate, and observed in a Zeiss EM-10 transmission electron microscope. Our results showed that the epithelium of palps, mouth and esophagus was ciliated columnar squamous epithelium, with microvilli. Cell junctions of adherens and occludens types were present between the epithelial cells of this species. Our results show that the digestion process in *Saccostrea palmula* starts in the palps. Abundant mitochondria in the apical zones of the epithelial cells of the palps were observed; contrarily, mitochondria at epithelium of mouth and esophagus mucosa were mainly localized at the basal invaginations of the cellular membrane that are associated with cellular energetic processes. Epithelial cells from esophagus contained lysosomes that are associated with digestion, cell absorption and enzymatic activities. In sum, an important difference observed in this species is that the digestive process is initiated at the palps level, contrarily to most reports in this genus that consider that the digestion starts at the stomach.

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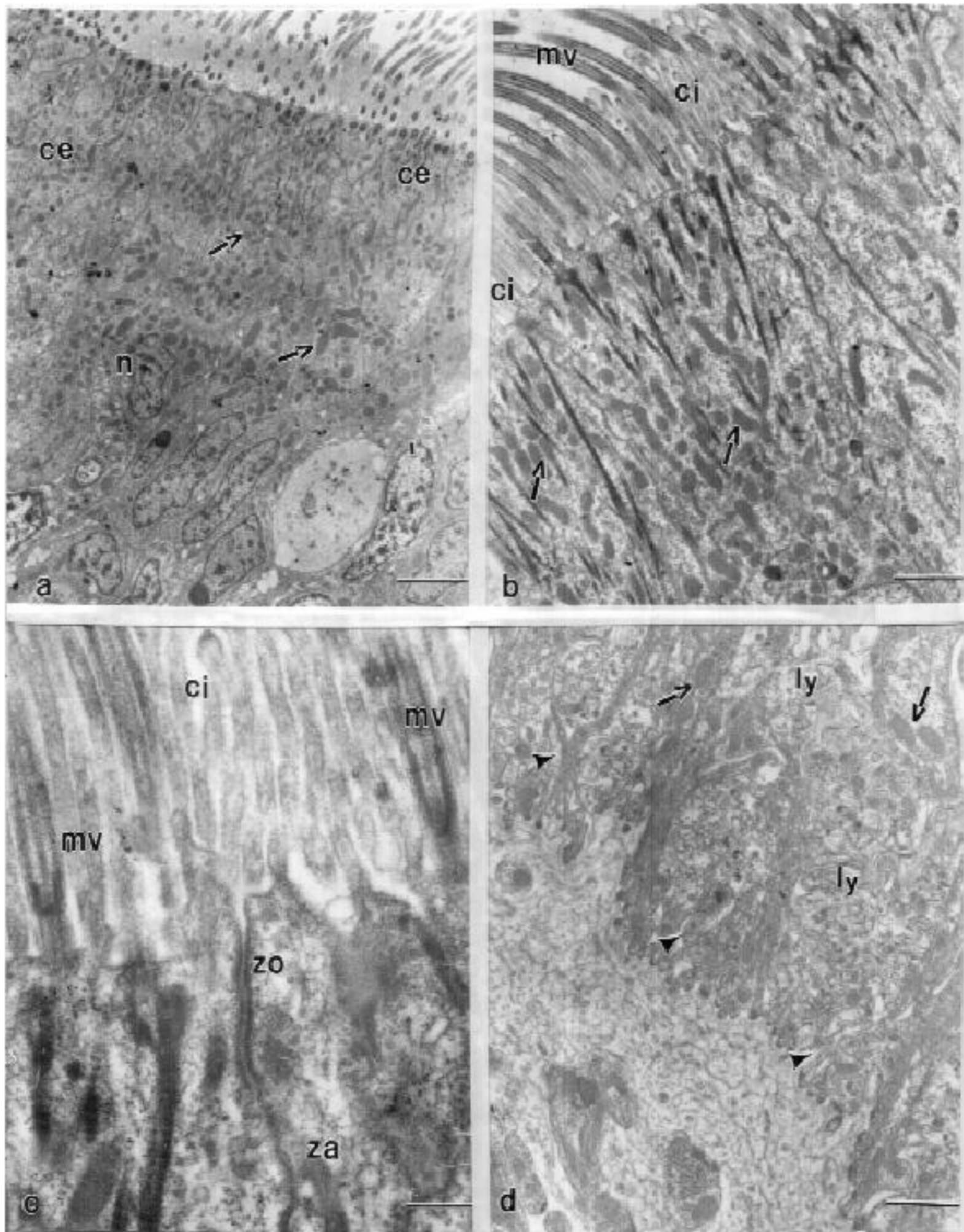


Fig. 1 (a) *Saccostrea paluma*. Palps, ciliated columnar squamous epithelium (ce), nuclei (n) and abundant mitochondria (arrows) are shown. Barr = 1 μ m. (b) Mouth, microvilli (mv), cilium (ci) and mitochondrias (arrows) are shown in the epithelium. Barr = 1 μ m. (c) Mouth, cilium (ci), microvilli (mv), zonula occludens (zo), zonula adherens (za) are present. Barr = 0.5 μ m. (d) Esophagus, secondary lysosomes (ly), mitochondria (arrows) and invaginations of the basal membrane projecting into the cytoplasm (arrow-head) are observed in the basal portion of the epithelial cells. Barr = 1 μ m.