KINETIC CHARACTERISTICS, EPITHELIAL ARCHITECTURE AND IMMUNOLOCALIZATION OF GILL (Na^+ , K^+)-ATPASE INDUCED BY LOW SALINITY ACCLIMATION IN THE STRIPED HERMIT CRAB *CLIBANARIUS VITTATUS* (ANOMURA, DIOGENIDAE)

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INTRODUCTION: Euryhaline crustaceans tolerate exposure to a wide range of dilute media. However, the physiological mechanisms by which these organisms adjust to salinity changes remain largely unexplored at the molecular level. **OBJECTIVES:** To examine the effect of low salinity on gill Na,K-ATPase activity and epithelial ultrastructure. **MATERIAL AND METHODS:** Gill epithelial ultrastructure (Antunes et al., J. Exp. Zool. 327: 280, 2017), and Na,K-ATPase activity (Leone et al., J. Membrane Biol. 248: 257, 2015) and immunolocalization (Pinto et al., Aquat. Toxicol. 170: 13, 2017) were examined in *C. vittatus* either fresh caught from seawater (31 ‰) or acclimated to 15 ‰. **RESULTS AND DISCUSSION:** Only a single ATP binding site ($V_M=130.8 \pm 10.5$ nmol min⁻¹ mg protein⁻¹; $K_{0.5}=55.3 \pm 1.7$ μmol.L⁻¹) was disclosed. Na/K-ATPase activity was modulated by Mg²⁺, Na⁺, and NH₄⁺, exhibiting site-site interactions; K⁺ modulation showed Michaelis-Menten kinetics. K⁺ plus NH₄⁺ synergistically stimulated activity ≈1.7-fold. Ouabain inhibited total ATPase activity by ≈70% ($K_i=220-300$ μmol.L⁻¹), revealing phosphohydrolytic activities other than the Na/K-ATPase in the epithelia. Positive silver staining revealed that all 26 phyllobranchiate arthro- and pleurobranchiae participate equally in chloride transport. Na/K-ATPase α-subunit staining was weak in seawater crabs and distributed exclusively and irregularly within the intralamellar septal cells, particularly at the septal-pillar cell body junctions, and septal cell cytoplasm facing the hemolymph space. In 15‰ crabs, α-subunit localization was intense, occupying the entire thickened septum. Pillar cells and flanges did not stain. Mitochondria increased in the pillar cell bodies and intralamellar septal cells while membrane foldings increased in both cell types, greatly amplifying surface area. Despite ample phylogenetic separation, the phyllobranchiate lamellae of the Anomura and Caridea share many ultrastructural features, i.e., an intralamellar septum and abutting opposed pillar cells, similar Na/K-ATPase immunolocalization and comparable kinetic characteristics. **CONCLUSIONS:** Our findings suggest either convergent evolution at the structural and biochemical levels, or preservation of characteristics present in a common ancestor.

Keywords: low salinity acclimation, gill ultrastructure, Na⁺/K⁺-ATPase.

Financial Support: FAPESP, CNPq, CAPES, FAPEAM, INCT-ADAPTA.