

## Effect of Salinity on Osmoregulatory Capability and (Na<sup>+</sup>, K<sup>+</sup>)-ATPase Activity in the Gills of the Thinstripe Hermit Crab *Clibanarius symmetricus* (Crustacea, Decapoda)

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**INTRODUCTION:** The evolutionary history of the Crustacea reveals ample adaptive radiation and the occupation of many osmotic niches resulting from physiological plasticity in their osmoregulatory mechanisms. **OBJECTIVE:** To better comprehend the molecular mechanisms underlying the osmotic response to salinity challenge, by evaluating hemolymph osmoregulatory capability and gill (Na<sup>+</sup>, K<sup>+</sup>)-ATPase activity in the thinstripe hermit crab *Clibanarius symmetricus* after direct acclimation to different saline media (5, 15, 25, 35 or 45 ‰) for 10 days. **MATERIAL AND METHODS:** Specimens of *C. symmetricus* were collected from the Araçá mangrove, São Sebastião, northern coast of São Paulo State, Brazil. Hemolymph osmolality was measured by vapor pressure micro-osmometry and the (Na<sup>+</sup>, K<sup>+</sup>)-ATPase activity was assayed in gill microsomal preparations using a PK/LDH coupling system. **RESULTS AND DISCUSSION:** *C. symmetricus* strongly hyper-regulates its hemolymph at 5 ‰ (488.5 ± 39.7 mOsm/ kg H<sub>2</sub>O), weakly hyper-regulates up to 25 ‰ (664.5 mOsm/kg H<sub>2</sub>O, mathematically obtained value), becoming practically isosmotic at 35 and 45 ‰ (1,076.5 ± 4.5 and 1,390.2 ± 7.1 mOsm/ kg H<sub>2</sub>O, respectively). After acclimation for 10 days to different salinities (5, 15, 25, 35 or 45 ‰) (Na<sup>+</sup>, K<sup>+</sup>)-ATPase specific activities were: 76.9, 57.2, 49.6, 52.5 and 22.1 U/mg protein, respectively. These biochemical findings demonstrate a decrease in (Na<sup>+</sup>, K<sup>+</sup>)-ATPase gill activity with increasing salinity, apparently corroborating the physiological adjustment to isosmoticity (osmoconformation). **CONCLUSIONS:** The greater efficiency of salt uptake processes (hyper-regulation) in dilute media compared to salt secretion in concentrated media (hypo-regulation) reflects adaptation to the hypo-osmotic challenge frequently encountered in the intertidal zone.

**Keywords:** *Clibanarius symmetricus*, mangrove crab, (Na<sup>+</sup>, K<sup>+</sup>)-ATPase

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