Kinetic Characterization of (Na\textsuperscript{+}, K\textsuperscript{+})-ATPase Activity of Microsomal Gill Tissue Crab *Goniopsis cruentata* (Decapoda, Grapsidae)

Moraes, C. M.\textsuperscript{1}, Lucena, M. N.\textsuperscript{2}, Pinto, M. R.\textsuperscript{1}, Leone, F. A.\textsuperscript{1}

\textsuperscript{1} Faculdade de Filosofia Ciências e Letras de Ribeirão Preto (FFCLRP)-Departamento de Química; \textsuperscript{2} Faculdade de Medicina de Ribeirão Preto (FMRP)-Departamento de Bioquímica; Universidade de São Paulo (USP), São Paulo.

**Introduction:** The (Na\textsuperscript{+}, K\textsuperscript{+})-ATPase is responsible for the active transport or pumping of intracellular sodium ions and potassium from the extracellular medium. **Objectives:** The objectives of this study were to obtain and to characterize microsomal fractions rich in (Na\textsuperscript{+}, K\textsuperscript{+})-ATPase and kinetically characterize the K\textsuperscript{+}-phosphatase activity of the gills of *G. cruentata*. **Material and Methods:** p-Nitrophenylphosphatase activity (K\textsuperscript{+}-phosphatase activity) was measured continuously at 25°C, through the release of p-nitrophenolate ion. Standard conditions were: Hepes 50 mmol L\textsuperscript{-1}, pH 7.5, containing p-nitrophenylphosphate (PNPP) 10 mmolL\textsuperscript{-1}, MgCl\textsubscript{2} 7 mmolL\textsuperscript{-1} and KCl 10 mmolL\textsuperscript{-1}, in a final volume of 1 mL. The activity was also determined under the same conditions in the presence of ouabain 3 mmolL\textsuperscript{-1}. One unit (U) of enzyme activity was defined as the amount of enzyme that hydrolyzes 1.0 nmol of substrate per minute at 25 °C. SDS-PAGE was performed in polyacrylamide gel gradient (5-20%) as described by Laemmli (1970). **Results:** PNPP stimulated K\textsuperscript{+}-phosphatase activity of (Na\textsuperscript{+}, K\textsuperscript{+})-ATPase according to a single saturation curve with V=75.1 nmol min\textsuperscript{-1} mg\textsuperscript{-1}, and K\textsubscript{0.5}=1.26 mmol L\textsuperscript{-1}, and showing site-site interactions (nH=1.45). Enzyme activity modulation by magnesium (V=70.13 nmol min\textsuperscript{-1} mg\textsuperscript{-1}, and K\textsubscript{0.5}=1.50 mmol L\textsuperscript{-1}) and potassium ions (V=58.5 nmol min\textsuperscript{-1} mg\textsuperscript{-1} and K\textsubscript{0.5} =2.30 mmol L\textsuperscript{-1}) occurred through positive cooperativity. SDS-PAGE results corroborated the presence of (Na\textsuperscript{+}, K\textsuperscript{+})-ATPase in the microsomal fraction. **Conclusions:** The present results have shown that K\textsuperscript{+}-phosphatase activity of (Na\textsuperscript{+}, K\textsuperscript{+})-ATPase present in microsomal fraction of gills from *Goniopsis cruentata* is modulated by magnesium and potassium ions, and that this microsomal fraction is rich in (Na\textsuperscript{+}, K\textsuperscript{+})-ATPase activity.

**Key words:** Kinetic characterization, *Goniopsis cruentata*, (Na\textsuperscript{+}, K\textsuperscript{+})-ATPase activity.

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