

ALKALINE PROTEASES FROM TROPICAL FISH PROCESSING WASTE AS HEAVY METALS BIOMARKER.

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The use of viscera from tropical fishes has been cited as an alternative source of proteolytic enzymes. The aim of this work was to purify and characterize a protease extracted from pyloric caeca of crevalle jack (*Caranx hippos*) and to evaluate the effect of heavy metals on its activity. This enzyme was partially purified by a three-step procedure: heat treatment, ammonium sulphate precipitation and Sephadex G-75 filtration. The optimum pH found was 8.0, while the optimum temperature was found at 50°C. A decrease of 20% in the activity was detected when the enzyme was previously incubated in this temperature for 30 min. Only one band (30 kDa) was observed when a sample of purified enzyme was applied in SDS-PAGE (12,5%). Specific protease inhibitors provide additional evidences that a trypsin-like enzyme is responsible for this proteolytic activity. The protease also showed high inhibition by Zn²⁺, Cd²⁺, Cu²⁺ and Hg²⁺ at concentration 1 mM. Moreover the concentration as low as 0.01 ppm of these ions was enough to inhibit 72.4%, 61.8%, 76.4% and 73.4%, respectively. The fact of this fish trypsin can be easily obtained and purified, presenting high sensibility to heavy metals, suggest that this enzyme may be employed as biomarker.

Keywords: processing waste, tropical fish enzyme, protease, trypsin, *Caranx hippos*, technological applications.

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