**Abstract**

Crustaceans are a large and diverse invertebrate animal group that contains a complex and well-organized innate immune response against a variety of microorganisms. In crustaceans, the defense system against microbes rests largely on cellular activities performed by haemocytes such as adhension, phagocytosis, encapsulation, nodule formation and melanisation. Hence an investigation has been conducted to generate melanization reaction in the mud crab, Scylla serrata by treatment with pronase. Experimental studies performed in vitro had shown that inactive phenoloxidase could be activated directly by treatment with exogenous protease or detergents. The optical density of pronase treated samples increased from 0.127 to 0.424 at 540 nm. The serum of *S. serrata* was further fractionated into haemocyanin and clarified serum (depleted from haemocyanin) and tested the ir responsiveness to pronase-treatment. Pronase treatment of clarified serum did not significantly induce colour change as well as its optical density at 540 nm. Treatment of haemocyanin with pronase resulted in change in colour of the serum from light blue to black. The optical density of these samples also enhanced from 0.049 to 0.173. The relationship among melanization reaction and HA activity generated after treatment of serum of *S. serrata* with pronase was analyzed by adding phenyl thio urea to pronase treated serum. This inhibited melanization reaction but did not affect the induction of HA activity.