**Abstract**

Invertebrates are dependent on cellular and humoral immune defences against microbial infection. *Scylla serrata* is an important commercial species of crab, but the fundamental knowledge on its immune defense related to the immune-associated reactions is still lacking. This study was undertaken to determine the antibacterial activities of serum from the mud crab, *Scylla serrata* against three different bacterial strains. Bacterial cultures were treated with different volumes serum from *Scylla serrata* and the growth was monitored by optical density at 450 nm. In addition, the serum was treated with protease to determine the mechanism of antibacterial activities. Treatment of bacterial cultures with serum from mud crab, *Scylla serrata* resulted in a volume-dependent decrease in bacterial growth. Cultures of *M. lysodeikticus*, exhibited strong growth inhibition by serum of *Scylla serrata*, while cultures of *Vibrio furnissi and Vibrio damsel* were nearly completely obliterated for 24 h by only 10% (v/v) serum. The antibacterial activity of *Scylla serrata* serum occurred very rapidly, as 18% of *M. lysodeikticus* growth was inhibited by a five min exposure to serum. Furthermore the bacteriolytic activity detected in the presence of phosphate buffer was significantly higher than that observed with, thereby indicating the suitability of phosphate buffer for assay of bacteriolytic activity.