Several newly identified immune-associated components in mud crab (*Scylla paramamosain*) and their potential anti-infection functions

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The mud crab, *Scylla paramamosain* is one of the most important marine breeding crabs in China and often suffers from pathogen infection with high mortality; however few effective immune methods could be utilized for controlling or minimizing the mortality of crabs in the farms. This paper summarized a series of studies undertaken in our lab on several newly identified immune-associated components which are likely to play a very important role in protecting the crabs from infection. Transcriptomic profiling first reveals the innate immune response patterns and potential pathways associated with antimicrobial activity, proPO cascade and lectin system in the early development stages of mud crab. Several new immune-associated components including a membrane lipid rafts related gene *Sp*FLT-1, a hemichannel-associated transmembrane protein named as Sp-inx2, two antimicrobial peptides named as Sphistin and SpHyastatin, were separately identified in different tissues of *S. paramamosain*. Their complete cDNA sequences and gene organization were determined, their tissue-specific distribution and expression patterns during the bacterial or fungi challenge were also evaluated. Furthermore, functional studies of these components were performed in vivo and in vitro. The intense studies have provided new knowledge on clarifying the pathogenesis of pathogens infecting *S. paramamosain*, information on the key roles in immunity and cell apoptosis in the marine mud crabs and the knowledge on how these new peptides play a role against pathogenic invasion and their antimicrobial features on different species of pathogens *in vitro*.

Key words: *Scylla paramamosain*; *Sp*FLT-1; Sp-inx2; AMPs; Anti-function;

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