

ANTIMICROBIAL PEPTIDES FROM CRUSTACEANS AND THEIR ROLE AS IMMUNE-EFFECTORS IN THE CONTROL OF INFECTIONS

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Antimicrobial proteins or peptides (AMPs) are major components of the innate immune system of vertebrates, invertebrates and plants. In crustaceans, that lack the adaptative immune system of vertebrates, these molecules are crucial immune effectors against microbial infections. Three kinds of AMPs have been recently isolated and characterized from the hemocytes of marine crustaceans: penaeidins, anti-lipopolysaccharyde factors (ALF) and crustins. Penaeidins were the first peptides to be fully characterized from *Litopenaeus vannamei* and are active against gram-positive bacteria and filamentous fungi. On the other hand, the ALFs have a broader spectrum of activity, including also Gram-negative bacteria and vibrios, whereas crustins, whose antimicrobial activity is still scarcely known, is apparently effective only against Gram-positive marine bacteria. We have been investigating the occurrence of AMPs in different indigenous Atlantic penaeids (*Farfantepenaeus paulensis*, *F. subtilis*, *F. brasiliensis* and *Litopenaeus schmitti*), freshwater prawns (*Macrobrachium olfersi* and *M. potiuna*) and grapsid crabs (*Goniopsis cruentata* and *Chasmagnathus granulata*), through molecular approach. We were able to clone different penaeidin, ALF and crustin isoforms from cDNA sequences in all penaeid species, but not in the other crustacean groups. We are presently attempting to synthesize some of these AMPs by recombinant expression, in order to evaluate their antimicrobial spectra and consequently their potential use as therapeutic agents for Aquaculture and human health.

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