

Penaeid Shrimp Immune System

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Abstract

Research on an innate immune system of penaeid shrimp is greatly motivated by economical requirements, because their culture is limited by the development of infectious diseases. As invertebrates, shrimp's natural immunity acts as a fast and efficient defence mechanism against the pathogens. Their immune system involve hemocytes (for encapsulation, nodule formation and phagocytosis), several plasma components (antimicrobial peptides, histones, lysosomal enzymes, lipopolysaccharide, -1,3-glucan binding proteins, and recognition molecules), and multimeric systems (clotting protein cascade, prophenoloxidase system). When these defense mechanisms fail to protect the shrimp against bacteria, viruses, fungi, protozoa and their products, disease develops and a negative impact takes place in the shrimp culture system. Studying the shrimp immune system is attractive for the advancement of a basic knowledge on invertebrate and vertebrate general immunity, because it offers various possible alternatives for disease management in shrimp aquaculture. The aim of this document is to present the general status of the shrimp defense system, to help in the development of strategies that favor the control and prevention of disease.