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Abstract
VIII. ABSTRACT

Virus was purified from WSSV infected shrimp and the coat proteins chosen for the vaccination studies were VP28, VP281, VP39 and VP466. The genes of each of the coat proteins were cloned and expressed in *Escherichia coli*. The expressed protein was purified by affinity chromatography. Adult *Penaeus monodon* (weighing approximately 8-9 g) were vaccinated with purified recombinant proteins by intramuscular injection. The relative percentage survival of the shrimps vaccinated with recombinant proteins was in the order VP28>VP39>VP466>VP281. The shrimps were also vaccinated orally with the bacteria expressing recombinant proteins and the relative percentage survival of the shrimps vaccinated orally was in the order VP28>VP39>VP466>VP281. The result clearly demonstrates the protection offered by the protein VP28 and its potential as a vaccine candidate against WSSV infection. For the RNAi study the gene *vp28* was selected and dsRNA was prepared for that gene. A small region (~355 bp) of *β-lactamase* gene of *Edwardsiella tarda* was used as non specific negative control. dsRNA of both the genes was injected separately into shrimps. Shrimp injected with VP28dsRNA showed 100% survival whereas shrimp injected with *β-lactamase* dsRNA showed 100% mortality. RT-PCR was done to confirm the silencing of *vp28* gene of WSSV in experimental shrimp. *β-actin* gene expression was used to check the quality of extracted RNA. The results of western blotting also showed suppression of VP28 protein expression in the shrimp injected with VP28dsRNA. This study proves the utility of recombinant protein vaccine and RNAi technology in affording protection to shrimp against WSSV infection.