Effect of Recombinant Agrocybe aegerita Lectin on the White Spot Syndrome Disease Resistance of Shrimp

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ABSTRACT

White spot syndrome virus (WSSV) is a highly pathogenic and prevalent virus affecting crustacean. Disease caused by WSSV is the greatest challenge to word wide shrimp aquaculture. In this stuffy, full length cDNA of Agrocybe aegerita lectin (AAL) gene was cloned, recombinant AAL (rAAL) was expressed by prokaryotic (Escherichia coli) expression system and the activities of this recombinant protein including the anti WSSV effects were analyzed. Amino acids analysis showed that AAL with a carbohydrate recognition domain (CRD) and protein modification motif. AAL might be with strong agglutination activities for lacking cystine in its amino acids composition. Native gel electrophoresis demonstrated the rAAL with the ability for self-forming a dimmer structure. In agglutination test, rAAL agglutinated rabbit Red Blood Cell (RBC) at very low concentration (0.25ng/ml). The anti-WSSV assays performed on Litopenaeus vannamei showed an obvious effect. The rAAL treated shrimp groups were with greater than 20% survival rate than the untreated ones in five days.

Keywords : WSSV ; lectin ; Agrocybe aegerita

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