

Jaruwan Chinnakorn 2007: Effects of β -glucan Supplementation on Expression of Immune-related Genes, and Resistance Against *Vibrio harveyi* and White Spot Syndrome Virus in Black Tiger Shrimp (*Penaeus monodon* Fabricius). Master of Science (Aquaculture), Major Field: Aquaculture, Department of Aquaculture. Thesis Advisor: Mr. Prapansak Srisapoome, Ph.D. 117 pages.

Expression analysis of ten immune-related genes (Anti-microbial peptide, β -glucan binding protein, crustin, heat shock protein 70, lysozyme, peroxinectin, penaeidin, prophenoloxidase, serine proteinase inhibitor and transglutaminase), were investigated in haemocytes, heart, hepatopancreas, muscle, foregut, midgut, hindgut, gills, and subcuticular epithelium of a healthy black tiger shrimp (12 g body weight) using conventional RT-PCR. The high expression levels of these genes were observed in haemocytes, gills, heart and high gut, respectively. Effects of four different diets with 0, 1, 3 and 5 g of β -glucan/kg on expression levels of immune-related genes in haemocytes of black tiger shrimps (12.85 \pm 0.69 g body weight) were investigated at day 0, 1, 3, 7, 10 and 14 after feeding. Shrimps fed with 3 and 5 g of β -glucan/kg diet resulted in higher mRNA expression levels of some immune-related genes in some days, especially at day 1, 3 and 14. Efficacies of β -glucan supplemented diet on disease resistances were also evaluated. Supplemented feed with 3 and 5 g of β -glucan/kg diet showed higher performance in *V. harveyi* resistance. The accumulative percent mortality of these two shrimp groups was found to be significantly lower than those of control shrimps and shrimps fed with 1 g of β -glucan/kg diet ($P < 0.01$) by 55.6 \pm 8.6, 33.0 \pm 0.0, 72.2 \pm 17.2 and 61.1 \pm 8.6 %, respectively. On the other hand, no disease resistance of all β -glucan-consuming shrimps was observed when they were challenged with white spot syndrome virus (WSSV).

Student's signature

Thesis Advisor's signature

