

Mintra Seel-audom 2009: Application of *Bacillus* spp. as Probiotics for the Inhibition of *Vibrio harveyi* and Immunostimulation in Pacific White Shrimp (*Litopenaeus vannamei*, Boone). Master of Science (Aquaculture), Major Field: Aquaculture, Department of Aquaculture. Thesis Advisor: Associate Professor Nontawith Areechon, Ph.D. 123 pages.

Isolation and identification of *Bacillus* spp. from intestine of Pacific white shrimp (*Litopenaeus vannamei*, Boone) from commercial farms yielded five species of *Bacillus* including *B. licheniformis*, *B. cereus*, *B. subtilis*, *B. coagulans* and *B. sphaericus*. Inhibition activity of *B. licheniformis* over *Vibrio harveyi* by cross streak method was detected. While co-culture method in 20 ppt sea water indicated the reduction of *V. harveyi* at 67.86, 58.59 and 78.12% by *B. licheniformis*, *B. subtilis* and *B. sphaericus*, respectively which were significantly different from other *Bacillus* spp. ($P < 0.05$).

Supplementation of spore form of *B. licheniformis* and/or *B. subtilis* as probiotics in Pacific white shrimp diet was conducted to investigate the effects on immunity. After one month of feeding trial, diet with *B. licheniformis* at 5 g/kg could significantly enhance the total haemocyte count, phenoloxidase activity, percent phagocytosis and bactericidal activity ($P < 0.05$). But after feeding with normal diet for 20 days, most immune parameters were not significantly different ($P > 0.05$) except the percent phagocytosis. All probiotics shrimp had significantly lower number of *Vibrio* spp. in the intestine than the control ($P < 0.05$). The frequency of probiotics application in Pacific white shrimp was conducted. There were no significant differences of most immune parameters between shrimp fed with probiotics diet every day and once in two days ($P > 0.05$) except the bactericidal activity in which the every day group was higher. This study clearly indicated the benefits of *B. licheniformis* as probiotics in shrimp diet in term of immunostimulation and inhibition of pathogenic bacteria. It also revealed that *B. licheniformis* was an effective probiont when applied at 5 g/kg in Pacific white shrimp diet for once in two days throughout the culture period.

Student's signature

Thesis Advisor's signature