

Chayaporn Tipsrimongkol 2009: Effects of DV AQUA on Non-Specific Immune Characteristics, Survival and Growth of Pacific White Shrimp (*Litopenaeus vannamei*). Master of Science (Fisheries Science), Major Field: Fisheries Science, Department of Fishery Biology. Thesis Advisor: Assistant Professor Niti Chuchird, Ph.D. 105 pages.

A study of the effects of Beta-glucan (DV AQUA) on growth, survival and immune response in Pacific white shrimp (*Litopenaeus vannamei*) was conducted under laboratory conditions and growout ponds. Laboratory tests were carried out in three treatments (with six replicates/treatment). Each replicate consisted of 25 shrimp (8-10 g) in 500-liter tanks. Shrimp were fed four times daily at 3% body weight per day for 50 days with pelleted feed containing graded levels of DV AQUA (0%, 0.125% and 0.25% of the feed). After 50 days of dietary administration, shrimp fed with 0.25% DV AQUA had an average body weight (16.11 ± 2.14 g) significantly higher ($P < 0.05$) than the control group (14.98 ± 2.20 g). No statistical difference was found between the average body weight of shrimp in the control group and the group that fed with 0.125% DV AQUA (15.56 ± 2.64 g). Survival rate of shrimp in the two DV AQUA groups ranged from 88.67-95.33% which was significantly higher ($P < 0.05$) than that in the control group (75.33%). The immune characteristics and survival rate of shrimp after experimental infection with *Vibrio harveyi* revealed that shrimp which fed on diets containing 0.25% DV AQUA had significantly higher ($P < 0.05$) THC, percentage phagocytosis, bactericidal activity, phenoloxidase activity, superoxide dismutase activity and survival rate after injection with *V. harveyi* than the 0.125% DV AQUA and control groups. Shrimp fed with 0.125% and 0.25% DV AQUA had bactericidal activity at the serum dilution of 1:16 while the control group had it at 1:8. Effects of DV AQUA on growth, survival and immune response in pond-reared *L. vannamei* were carried out in eight earthen ponds with an area of 6 rais/pond. Postlarvae 10 (PL10) were stocked at a density of 1,000,000 PL/pond. After 30 days shrimp from four treatment ponds were fed with pelleted feed consisting of 0.25% DV AQUA while shrimp in another four ponds were fed with regular pelleted feed for white shrimp as the control group. After 90 days of culture, shrimp from both treatment and control groups were sampled for immune parameters studies. Results showed that shrimp fed with 0.25% DV AQUA had significantly higher THC, percentage phagocytosis, bactericidal activity, phenoloxidase activity and superoxide dismutase ($P < 0.05$) than those of control group. After shrimp were harvested, the average production and survival rate of 0.25% DV AQUA group was 2,375 kg/rai and 82%, while they were only 2,202 kg/rai and 73% in the control group. The present study indicated that oral administration of 0.25% DV AQUA for at least 30 days could increase the growth, survival and immune response of *L. vannamei*.

Student's signature

Thesis Advisor's signature