

Patarida Podok 2011: Effects of *Bacillus* spp. in Combination with *Paracoccus pantotrophus* on Growth and Survival Rate of Nile Tilapia (*Oreochromis niloticus*). Master of Science (Fisheries Science), Major Field: Fisheries Science, Department of Fishery Biology.
Thesis Advisor: Associate Professor Chalor Limsuwan, Ph.D. 80 pages.

Experiment has been carried out to determine the efficacy of probiotic, consist of *B. subtilis*, *B. licheniformis*, *B. pumilus*, *B. amyloliquefaciens* and *B. megaterium* on inhibition of pathogenic bacteria *Aeromonas hydrophila* ABRC A1 and *Streptococcus agalactiae* ABRC S1 which isolated from Nile tilapia (*Oreochromis niloticus*). By cross streak method the results showed that *B. licheniformis* could inhibit *A. hydrophila* ABRC A1 after 48 hours of incubation at 35°C while *B. licheniformis*, *B. pumilus* and *B. subtilis* could colonize over *S. agalactiae* ABRC S1 after 48 hours of incubation at 35°C. Three species of *Bacillus* spp. which shown colonization ability were tested for ability to decrease pathogenic bacteria *S. agalactiae* ABRC S1 by broth co-culture method. *B. licheniformis*, *B. pumilus*, *B. subtilis* and *S. agalactiae* ABRC S1 were cultured in nutrient broth (NB) with the initial concentration of 10⁵ CFU/ml. After 48 hrs of culture, *S. agalactiae* ABRC S1 were decreased by 46.79%, 53.58% and 44.22% while the number of *Bacillus* spp. remaining unchanged. Effects of *Bacillus* spp. in combination with *Paracoccus pantotrophus* on growth and survival rate of Nile tilapia was carried out under laboratory conditions. Fish weight of 2 - 3 g were stocked into 500 – liter fiber glass tanks at a density of 100 ind./tank and divided into 4 treatments (with 3 replicates/treatment) as followed: treatment 1 (control group) without probiotic; treatment 2 probiotic was added into water at 0.1 ppm; treatment 3 probiotic was added into water at 1 ppm and treatment 4 probiotic was added into water at 0.1 ppm in the water and mixed probiotic with feed at 1 g/kg of fed 1 time/day. After 70 days, highest survival, 85.00 ± 9.54 % and yield, 1,639.15 ± 125.98 g were observed in treatment 4 and which was significantly higher than control group (p < 0.05). Effects of *Bacillus* spp. in combination with *Paracoccus pantotrophus* on growth and survival rate of Nile Tilapia was also studied in nursery cage. The newly hatch fry were stocked at the density of 15,000 ind./cage and divided into 4 treatments (with 3 replicates/treatment) as followed: treatment 1 (control group) without probiotic; treatment 2; probiotic was added in culture water 1 ppm everyday; treatment 3; fish were fed with probiotic 1g/kg of feed and treatment 4; fish were fed with probiotic 3 g/kg of feed. After 21 days, highest survival, 77.38 ± 1.53% was observed in treatment 3 which was significantly higher than control group (p < 0.05). Total ammonia in treatment groups was significantly lower than control group (p < 0.05). This study indicated that probiotic could be applied for nursing Nile tilapia in the farm.

Student's signature

Thesis Advisor's signature