

Supranee Pungpang 2007: Effect of Bacteria Isolated from Fish Culture Ponds on Inhibition of *Streptococcus agalactiae*, the Pathogenic Bacteria in Nile Tilapia (*Oreochromis niloticus*). Master of Science (Agricultural Biotechnology), Major Field: Agricultural Biotechnology, Interdisciplinary Graduate Program. Thesis Advisor: Mr. Prapansak Srisapoome, Ph.D. 93 pages.

The efficiency of bacteria isolated from fish culture ponds in Kamphangsaeen Fisheries Research Station (Faculty of Fisheries, Kasetsart University, Nakornprathom Province) on inhibition of pathogenic bacteria, *Streptococcus agalactiae* was investigated. Total of 114 isolates were collected from water (6 samples) and some components of fish bodies of Nile tilapia (*Oreochromis niloticus*) such as intestine (2 samples) and mucus (2 samples). The preliminary screening test of these bacteria using the cross streak method was employed. The result revealed that there were only 4 isolates that showed high performance in inhibiting of *S. agalactiae*. These bacteria were named B-1, B-2, B-3 and B-4, and were consequently known as *Bacillus licheniformis* for isolates B-1, B-2 and B-4, while isolate B-3 was *B. subtilis*. However, in second screening using the well diffusion assay, the highest efficiency of inhibition was obviously observed in *B. licheniformis* B-1 bacteria. Using the SDS-PAGE assay, a protein fragment approximately 4 kDa extracted from culturing broth medium of *B. licheniformis* B-1 was identified to be able in controlling *S. agalactiae in vitro*. Additionally, the efficiency of *B. licheniformis* B-1 bacteria was also evaluated the ability of protection fingerling fishes (25 days old) from *S. agalactiae* in lab scale. Interestingly, application of 10^5 , 10^6 and 10^7 cfu/ml of *B. licheniformis* B-1 by long immersion could protect experimental fishes significantly different ($P < 0.05$) from control group when they were simultaneously exposed to 10^6 cfu/ml of *S. agalactiae* for 14 days by accumulated mortality of 15.33 ± 2.93 , 13.67 ± 2.62 , 8.33 ± 2.77 and 61.67 ± 2.58 % respectively.

Student's signature

Thesis Advisor's signature

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