

Piyarom Pongchor 2009: Effects of *Schizochytrium* sp. on Growth and Survival of Pacific White Shrimp (*Litopenaeus vannamei*, Boone). Master of Science (Fisheries Science), Major Field: Fisheries Science, Department of Fishery Biology. Thesis Advisor: Associate Professor Chalor Limsuwan, Ph.D. 101 pages.

The effects of *Schizochytrium* sp. on growth and survival of Pacific white shrimp (*Litopenaeus vannamei*) were studied. In the first experiment, *L. vannamei* postlarvae (PL) 12 were fed with pelleted feed supplement with *Schizochytrium* sp. at 0% (control), 2.0%, 5.0% and 7.5% feed and reared in water salinity of 5 and 25 parts per thousand (ppt) for 30 days. Results showed that at salinity of 5 ppt the survival rate was  $84.00 \pm 2.0\%$  in the 7.5% *Schizochytrium* sp. group which was significantly higher ( $P < 0.05$ ) than that of 5.0%, 2.0% and 0% groups. PL fed with 2.0% *Schizochytrium* sp. had the highest average weight of  $1.071 \pm 0.004$  g which was significantly higher ( $P < 0.05$ ) than other experimental groups. At 25 ppt salinity, survival rate of PL fed with 7.5% *Schizochytrium* sp. was  $98.00 \pm 2.00\%$  which was significantly higher ( $P < 0.05$ ) than the control and other treatment groups. Average weight of PL from 2.0% and 7.5% *Schizochytrium* sp. groups were  $0.705 \pm 0.005$  g and  $0.701 \pm 0.005$  g, which were not significantly different ( $P > 0.05$ ). However, there were statistically difference ( $P < 0.05$ ) between these groups and the groups fed 5.0% and 0% *Schizochytrium* sp. In the second experiment, effects of various dietary protein levels of 38%, 36%, 32% and 32% supplemented with 2.0% *Schizochytrium* sp. on growth and survival of *L. vannamei* were studied under laboratory conditions. Shrimp (3-4 g) were reared in water salinity 25 ppt at the density of 30 shrimp per 500-liter tank for 60 days. The survival rate of shrimp fed with 32% protein supplement with 2.0% *Schizochytrium* sp. was  $94.44 \pm 1.92\%$  which was significantly higher ( $P < 0.05$ ) than that of 36%, 38% and 32% groups. Shrimp fed with 38% protein had the highest average weight of  $16.95 \pm 0.36$  g. There was no significant difference ( $P > 0.05$ ) between this group and the 36% protein group. However, there were significant differences ( $P < 0.05$ ) between these two groups and the 32% protein supplement with 2.0% *Schizochytrium* sp. and the 32% protein groups. In the third experiment, six earthen ponds with an area of 6 rais ( $9,600 \text{ m}^2$ ) were used with three control ponds, shrimp fed with pelleted feed (36% protein) and three treatment ponds, shrimp fed with pelleted feed (36% protein), supplement with 2.0% *Schizochytrium* sp. Shrimp were stocked at the density of 100,000 shrimp/rai ( $63 \text{ shrimp/m}^2$ ). At harvest (130 days), the average weight of shrimp from the experimental group was  $10.27 \pm 0.9$  g which was significantly lower ( $P < 0.05$ ) than the control group ( $12.97 \pm 1.3$  g). The survival rate and production of the treatment group was  $72.0 \pm 3.6\%$  and  $748.17 \pm 24.2$  kg/rai, which was significantly higher ( $P < 0.05$ ) than the  $40.0 \pm 9.0\%$  and  $529.22 \pm 94.7$  kg/rai of the control group. The average production cost of the treatment ponds was 68,260.50 baht/rai and net profit was 11,515.10 baht/rai compared with 59,760.50 baht/rai and 7,382.00 baht/rai in the control ponds. Results from this study indicated that supplement pelleted feed with *Schizochytrium* sp. at 2.0% could increase production and profit more than using only pelleted feed.

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Thesis Advisor's signature