Pattama Wiriyapattanasub 2011: Use of Spirulina-enriched Blood Clam(*Anadara granosa*) as Fresh-food Maturation Diet for Black Tiger Shrimp (*Penaeus monodon*) Broodstock. Doctor of Philosophy (Fisheries Science), Major Field: Fisheries Science, Department of Fishery Biology. Thesis Advisor: Associate Professor Chalor Limsuwan, Ph.D. 187 pages.

Two fresh-food maturation diets for black tiger shrimp (*Penaeus monodon*) broodstock were compared to assess the reproductive performance. Female broodstock shrimp of 10-12 inches in total length and weighing not less than 20 g/inch, and male broodstock shrimp of 8 inches or larger with body weight not less than 12 g/inch were used for the experiment. Shrimp were randomly stocked into two 4 m^3 maturation tanks with 19 females and 15 males per tank. For treatment 1, diet A was composed of 20% swimming crab (*Portunus pelagicus*), 10% sand worm (*Perinereis* sp.) and 20 % squid, while for treatment 2, diet B was composed of 20% swimming crab, 10 % *Spirulina*-enriched blood clam (*Anadara granosa*) and 20 % squid. The formulation of diet A is the most commonly used in the shrimp hatchery of Thailand. The broodstock of each treatment was fed with different natural food at different percentage of shrimp body weight three times a day (at 05.00, 13.00 and 22.00) throughout the 30-day, of the feeding trail. At the end of the trial, the reproductive performance of the broodstock of each treatment was compared. The average number of spawning of treatment 1 (19 females) was 64 or 3.37$\pm$1.12 per female compared to 62 or 3.26$\pm$1.32 per female in treatment 2 (19 females). The number of eggs and nauplii produced from treatment 1 were 68.55 $x10^6$ and 36.7 $x10^6$ compare to 61.20$x10^6$ and 35.2 $x10^6$ for treatment 2. There was no significant differences ($P>0.05$) between treatment 1 and 2. Moreover, percentage hatching rates and metamorphosis to nauplius stage from treatment 1 and 2 were not significantly different ($P>0.05$). However, total carotenoids in eggs from treatment 1 was 3.22$\pm$ 0.10 µg g^{-1} significantly lower than 7.82$\pm$0.14 µg g^{-1} for treatment 2 ($P<0.05$). This study indicated that *Spirulina*-enriched blood clam can be used on fresh-food maturation diet for *P. monodon* broodstock instead of sand worm if female broodstock size was 10-12 inches in total length.

Furthermore, survival rate of larval rearing from nauplii to postlarvae 15 for treatment 1 was 48.44 % not significaltly different from 46.57 % of treatment 2 ($P>0.05$). Chlorine and non-chlorine treatments of seawater for larval rearing, in terms of reducing total bacteria and *Vibrio* spp. numbers were also studied.

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