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KANOKPORN CHAYABURAKUL: IMPROVEMENT OF OVARIAN MATURATION AND FECUNDITY IN POND-REARED *PENAEUS MONODON* WITH ω -3 FATTY ACIDS. THESIS ADVISOR: BOONSIRM WITHYACHUMNARNKUL, M.D. Ph.D., PRAYAD KOMARATAT, Ph.D., PRAPEE SRETARUGSA, Ph.D. 61 P. ISBN 974-588-887-7

Eicosapentaenoic acid (EPA, C₂₀:5 ω 3) and docosahexaenoic acid (DHA, C₂₂:6 ω 3) are essential for reproductive performance of giant tiger prawn *Penaeus monodon*. Since both substances are abundant in fish oil, feeding the shrimp with diet enriched in fish oil might be beneficial. Fish oil was biochemically by-processed to increase the proportion of EPA and DHA; this modified fish oil (MFO) contained 21.1 % EPA and 54.3 % DHA.. The MFO was mixed with commercial pellet and was also injected into the haemolymph of mud clam or cockle, *arca granulosa*, at the same concentration as in maturation pellet, and served as fresh diet for the shrimp. Potential *P. monodon* broodstocks were divided into three groups: Control group, receiving basal diet; Enriched-1 group, receiving basal diet plus 0.5 % MFO; and Enriched-2 group, receiving basal diet plus 5.0 % MFO. The basal diet was commercial pellet (2 % body weight daily) and fresh feed (4 % body weight daily), which was squid and MFO-injected cockle. Potential broodstocks, aged about 1.5 years in earth-pond were kept for one month in a mating place and one month in maturation tanks, and were fed *ad lip* according to the above regimen. This study is composed of three experiments. In Experiment 1, the broodstocks were reared up in earthen-pond during mating period, and were composed of Control, Enriched-1 and Enriched-2 groups. In Experiment 2 and 3, the shrimp were mated in 8 tone concrete tanks. Experiment 2 contained Control, Enriched-1 and Enriched-2 groups, but Experiment 3 had only Control and Enriched-1 groups. Ovarian development was determined during the maturation period. The females that reached stage IV of ovarian maturation were transferred to spawning tanks and allowed to spawn overnight. The nature of spawning, number of eggs, size and type of eggs, hatching rate, rate of metamorphosis from nauplius to protozoa 1 and the survival rate of PL15 were investigated. The Enriched-1 groups, in experiment 2 and 3 were the best groups in terms of survival rate of broodstocks, hatching rate and rate of metamorphosis of larvae. Furthermore, In Experiment 1, there was only one spawner from Control group and a very low survival rate of broodstocks. This study suggested that EPA and DHA which was added as supplementary in *P. monodon* diet could improve ovarian development and fecundity in pond-reared *Penaeus monodon* broodstocks.