Nisarat Aiamanee 2014: Effect of Omega-3 Fatty Acid on Growth, Survival and Prevention to *Vibrio harveyi* of Pacific White Shrimp (*Litopenaeus vannamei*) in Laboratory Conditions. Master of Science (Fisheries Science), Major Field: Fisheries Science, Department of Fishery Biology. Thesis Advisor: Assistant Professor Niti Chuchird, Ph.D. 75 pages.

A study of the effect of Omega-3 fatty acids (extracted from Schizochytrium sp.) on growth and survival rate of Pacific white shrimp (*Litopenaeus vannamei*) was carried out under laboratory conditions. Tests were carried out in three treatments (with three replicates/treatment). Postlarvae 12 were stocked in 500-L fiberglass tanks (salinity 25 ppt and temperature 29 ± 1ºC) at a density of 50 PL/tank. Shrimp were fed four times daily with pelleted feed containing Omega-3 fatty acids at 0, 0.5 and 1 g./ 1kg. feed. After 60 days of dietary administration, shrimp fed with 0.5 and 1 g./ 1kg feed. of Omega-3 fatty acids had an average body weight of 5.62 + 0.22 g and 5.68 + 0.23 g., which were significant higher($p<0.05$) than the control group without Omega-3 fatty acids (4.77 ± 0.36 g). Shrimp fed 1 g./ 1kg feed. of Omega-3 fatty acids had the highest survival rate at 57.33 + 6.11 %, higher than the group fed with 0.5 g./ 1kg feed. of Omega-3 fatty acids (45.33 + 2.67%) and the control group without Omega-3 fatty acids (36.89 + 2.04%). Statistically differences ($p<0.05$) were observed among the three treatments.

A study of the effects of Omega-3 fatty acids on preventing *Vibrio harveyi* in rearing of Pacific white shrimp was conducted under laboratory conditions. Thirty shrimp (10-12 g) from each tank in the previous experiment were randomly sampled and stocked in 12 x 500-L fiberglass tanks with four replicate tanks per treatment. *V. harveyi* were added into each tank to obtain final concentration of 10^5 CFU/ml. Each treatment group was received aforementioned diets four times daily for another 14 days. All water quality parameters were maintained as the previous experiment. A study of the effects of Omega-3 fatty acids on preventing *Vibrio harveyi* revealed that shrimp fed 1 g./ 1kg feed. of Omega-3 fatty acids had the survival rate of 81.67+2.89 % , higher than the group fed with 0.5 g./ 1kg feed. of Omega-3 fatty acids (78.33 ± 2.89 %) and the control group (71.67 ± 5.77%). The average weight of shrimp fed with 0.5 and 1 g./ 1kg feed. of Omega-3 fatty acids were 7.86 ± 0.04 และ 7.73 ± 0.08 gram, respectively . These were significantly higher ($p<0.05$) than the control group. The study on immune characteristics of shrimp revealed that shrimp in both groups that fed with Omega-3 fatty acids had significant ($p<0.05$) improvements in immune parameters, such as the percentage phagocytosis and phenoloxidase activity than the control group.The histopathological study revealed a sigh of collapse hepatopancreas in control shrimp, whereas shrimp in the group that fed 1 and 0.5 g. of Omega-3 fatty acids showed normal histopathology.

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