Rearing of Tiger Shrimp Larvae (*Penaeus monodon* Fabricius, 1798)

**Using Artificial Diets in Recirculation System**

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**Abstract**

The application of artificial diets in closed recirculation aquaculture system for nursing of shrimp (*Penaeus monodon*) larvae was conducted to develop an appropriate technique obtained good growth and high survival rate of shrimp larvae. The system consisted of biological filter, protein skimmers, and ozoneizer unit. Shrimp larvae were fed with microparticulated diets and nursed in closed recirculation system using different water recirculation rates at the stage of Zoea 2, Mysis 1 and Postlarval 1, respectively. The experiment was compared with the control traditional rearing system that shrimp were fed with live food *Chaetoceros* sp. and *Artemia* sp.

Results showed that artificial diet was well uptaked by shrimp larvae which successfully developed to Postlarval stage at day 11 in all experiments. Shrimp health, larval development, and length were not significantly different among treatments (p>0.05), while survival rate and mean body wet weight were significantly differenced (p<0.05). Shrimp larvae in Treatment 1 and 2 achieved the highest survival rate whereas the lowest survival rate was observed in the control. Shrimp larvae in Treatment 3 gained the highest mean body wet weight (p<0.05).

Total ammonia in nursing tank was examined as follow; 0.013-0.265, 0.012-0.184, 0.012-0.632, and 0.016-0.829 mg/l, respectively, and was continually increased throughout the experiment period in Treatment 3 and 4. In treatment 1 and 2, total ammonia was treated by 62±0.5% and 66±9%, respectively, which was changed to nitrite after day 8 of rearing. Less nitrite was examined to minimum in treatment 3. Similar accumulation pattern was observed between nitrite and nitrate. The control reached the highest accumulation of total ammonia, nitrate, and COD.

These results highlight the powered of nursing system of shrimp fed with artificial diets in the closed recirculation system. The appropriate water recirculation rates were 10-20% and 30-100% of water volume per day which started at either Zoea 2 or Mysis 1.
Key words: Recirculation aquaculture system, Microparticulated diets, Tiger shrimp larvae

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