

Krasindh Hangsapreurke 2009: Important Role of Five Major Elements (Na, K, Ca, Mg and Cl) for Giant Freshwater Prawn (*Macrobrachium rosenbergii* de Man) Larviculture. Doctor of Philosophy (Marine Science), Major Field: Marine Science, Department of Marine Science. Thesis Advisor: Assistant Professor Thon Thamrongnawasawat, Ph.D. 191 pages.

The study was an attempt to develop the techniques for *Macrobrachium rosenbergii* larviculture in the closed recirculating systems using salt from several sources such as rock salt, CSW (concentrated seawater from salt farm) and ASW (artificial seawater). Brackish water was prepared by mixing salts with freshwater to obtain 15 ppt. salinity. It was found that prawn larvae could not survive in brackish water that prepared from rock salt. On the other hand, survival rate and metamorphosis period of larvae cultivated using ASW ($28.63 \pm 3.21\%$) and CSW ($21.26 \pm 7.78\%$) were not significantly difference ($P > 0.05$). Development of embryos from gastrula to heart beating stages and changes of 5 major elements (Na, K, Ca, Mg and Cl) concentrations in medium were studied with berried females incubated at 5, 15 and 25 ppt in ASW for 10 days. The results indicated that, concentration of Na in medium was significantly ($P < 0.05$) decreased in all salinity while Mg was significantly ($P < 0.05$) decreased at 5 and 15 ppt. Concentration of all 5 elements in plasma was rather constant at all salinity. Percentage of egg development through heart beating stage of berried females incubated at 5 and 15 ppt was similar ($P > 0.05$) but it was significantly ($P < 0.05$) higher than that incubated at 25 ppt. Moreover, the significantly ($P < 0.05$) highest hatching rate was found at 5 ppt ($53.40 \pm 0.69\%$) and significantly ($P < 0.05$) decreased at 15 ppt ($46.09 \pm 0.91\%$) and 25 ppt ($37.00 \pm 0.91\%$), respectively. Further cultivation of larvae in 15 ppt illustrated that survival rate and metamorphosis period were not significantly difference ($P > 0.05$), however, significantly ($P < 0.05$) decreased of Na, Mg and K concentrations in medium was found. Finally, larviculture was performed using ASW supplemented with essential elements Mg+K, Mg and K. The results showed that metamorphosis of larvae were similar in all treatments but larvae in treatment with Mg+K supplement had significantly higher than those of supplement with K only and control ($P < 0.05$).

Student's signature

Thesis Advisor's signature