Tropentag, October 11-13, 2006, Bonn

"Prosperity and Poverty in a Globalised World—
Challenges for Agricultural Research"

Effect of Dietary L-ascorbyl-2-phosphate magnesium on the Growth, Survival Rate and Stress Resistance of Juvenile Giant Freshwater Prawn (*Macrobrachium rosenbergii*)

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Abstract

Among other factors, suboptimal feed quality may contribute to low survival rates of juvenile giant freshwater prawn. Most fish and shrimps are extremely sensitive to vitamin C deficiency. Quantitative requirements of vitamin C for optimum prawn growth varies among species and size of prawns. Therefore the objective of this experiment was to detect the amount of L-ascorbyl-2-phosphate magnesium (L-APM) in the diet allowing optimum growth and survival. Experiments were carried out at the hatchery of the Bogor Extension Fisheries Programme, Bogor, Indonesia. Aquaria, each with a water volume of 65 litres, were stocked with 100 post larvae (PL) of 0.02 g average weight. After adaptation, post larvae were fed with pelleted test feed (1mm diameter, 3000 Kcal DE/kg) including five different levels of L-ascorbyl-2-phosphate magnesium (L-APM):0 (control), 50, 100, 150, and 200 $^{mg}/_{kg}$ of feed. Each level of L-APM was tested in triplicate (18 aquaria). Juveniles were fed to satiation three times per day over a period of 60 days. The daily amount of feed ingested was recorded for each aquarium. After 60 days, PL were counted and weighted again. Water quality parameters (temperature, pH, oxygen, nitrite, ammonia) were measured daily during the whole experimental period. The best growth of juveniles was observed in the L-APM treatment with 200 $^{mg}/_{kg}$ feed and the highest survival rates in the L-APM treatment with 150 and 200 $^{mg}/_{kg}$ feed. The highest lipid retention (1.16 %) was observed in juveniles fed with L-APM supplement of 200 $^{mg}/_{kg}$ of feed. Whereas the highest protein retention (2.48 %) was found in juveniles fed on a ration supplemented with a L-APM level of 150 $^{mg}/_{kg}$ of feed. The optimum level of L-APM as a source of vitamin C for increasing survival rate was 150 mg L-APM/kg of feed. The results clearly showed that addition of L-APM to the diet can improve the growth and survival rate of the giant freshwater prawn juveniles.

Keywords: Growth rate, L-ascorbyl-2-phosphate magnesium, *Macrobrachium rosenbergii*, survival rate

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