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"Bridging the gap between increasing knowledge and decreasing resources"

Effect of Dietary Sodium Diformate on Growth Performance in Giant Freshwater Prawn under Controlled Conditions

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Abstract

Aquaculture of the Giant Freshwater Prawn, *Macrobrachium rosenbergii* (De Man 1879) started only in the mid nineteen-eighties, but has grown to more than 203,000 t, worth around 1.1 million USD in 2010 – mainly in Asia and the Americas and is still expanding rapidly, especially in Asia. Most of this production is carried out in monoculture in earthen ponds. Commercial diets include up to 35 percent crude protein. High stocking densities and non-optimal water quality, poor sanitation and non-existent or inadequate quarantine procedures may impair prawn health and growth performance. Growth may be improved through the application of high quality feeds, and sustainability of feed ingredient use is one of the main factors for future successful aquaculture operations. Adding sodium diformate (NDF), a double salt of formic acid, to the supplemental diet is expected to improve health and growth performance of the Giant Freshwater Prawn.

A laboratory trial was set up at the South East Asian Fisheries Development Center (SEAFDEC), Binangonan Freshwater Station in Rizal, Philippines. Prawns were kept with 15 individuals per tank with 4 replicate tanks per group. NDF was added to a commercial diet at a dosage of 0.5 %, while the diet without NDF served as a negative control. The initial weight of *M. rosenbergii* was 0.65±0.01 g. Prawns were kept and fed according to normal pond management for 71 days' culture. At the end of the trial, prawns in the treated group had a similar final weight of 4.1±0.1g and similar weight gain compared to the negative control group, whereas the survival rate and FCR improved significantly (77±3 v. 87.5±5 % and 2.05±0.14 v. 2.43±0.19, respectively; $p < 0.05$). The productivity index (PI = weight gain × survival / (10 × FCR)) was also significantly improved, by 35 %.

These results show significantly improved performance in Giant Freshwater Prawns fed with sodium diformate. Similar results have already been reported in diformate-fed white-leg shrimp in Thailand, further supporting the use of NDF in a sustainable aqua-feed industry, contributing to economic prawn production.

Keywords: Growth performance, *Macrobrachium* culture, sodium diformate

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