

Protection of cultured shrimp, *Penaeus monodon* from white spot disease (WSD) with enhanced immunity induced by *Achyranthes aspera* (Family Amaranthaceae) compared to a commercial immune enhancer

K V D H R Karawita* and M Hettiarachchi

Department of Zoology and Environmental Management, University of Kelaniya, Sri Lanka
hasithakarawita@gmail.com

Ethanol extract of soft aerial parts (leaves, soft branches and flowers) of Karal heba, *Achyranthes aspera* could enhance the innate immunological parameters of cultured shrimp, *Penaeus monodon*. This study investigated whether the enhanced immunity could protect cultured shrimp from white spot disease (WSD), a killer viral disease. From four groups of shrimp (10 ± 2 g body weight; 4 replicates and 12 shrimp in each), first group was fed with the feed incorporated with ethanol extract of soft aerial parts of Karal heba (experimental group), second group was fed with feed incorporated with the commercial immune enhancer "Immune x" and the remaining two groups (positive and negative controls) were fed with normal shrimp feed over 4 weeks. Three groups except the negative control group were then challenged with white spot virus (WSV) by feeding equal weight of infected shrimp tissues. Shrimp in positive control group began to show disease symptoms within 2 days from challenge with 100% cumulative mortality within the post challenge period; natural mortality of shrimp was 8.33% (recorded in negative control). Shrimp that received "Immune x" began to show symptoms of WSD on the 5th day from challenge with 64.58% cumulative mortality which was significantly higher than cumulative mortality recorded for the experimental group (25%; $P < 0.05$); there was no significant difference between natural mortality of shrimp and the mortality of experimental group ($P > 0.05$). Histopathology and PCR showed that moribund shrimp in all groups except shrimp in negative control were infected with WSV. Results confirmed that the immunity enhanced by the ethanol extract of Karal heba plant could protect the recipient shrimp from WSD when challenged with the virus.