

## Documents

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**Evaluation of diatom *Halamphora* sp. and harpacticoid copepod *Amphiascoides neglectus* as live food for black tiger shrimp *Penaeus monodon* postlarvae**

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**Abstract**

The present study investigated on the potential use of marine benthic diatom *Halamphora* sp. and harpacticoid copepod *Amphiascoides neglectus* enriched with *Halamphora* sp. on the growth, biochemical composition, water quality performance and disease tolerance of black tiger shrimp *Penaeus monodon* postlarvae culture. The introduction of *Halamphora* sp. and enriched harpacticoid copepod (EHC) as feed to the postlarvae increased the final weight gain ( $38.10 \pm 1.50$  to  $40.43 \pm 1.17$  mg/individual), weight gain ( $1267.97 \pm 24.59$  to  $1321.09 \pm 22.53\%$ ) and specific growth rate ( $9.34 \pm 0.22$  to  $9.47 \pm 0.26\%$  day<sup>-1</sup>) significantly ( $p < 0.05$ ) compared to the commercial feed. The protein and lipid contents of the postlarvae fed with EHC (protein:  $15.26 \pm 0.40\%$  wet weight (WW); lipid:  $1.91 \pm 0.07\%$  WW) were significantly higher ( $p < 0.05$ ) compared to *Halamphora* sp. (protein:  $13.66 \pm 0.51\%$  WW; lipid:  $1.70 \pm 0.01\%$  WW) and the commercial feed. Moreover, the inclusion of *Halamphora* sp. and EHC into the postlarvae zero exchange water culture yielded lower nitrite ( $0.141$  to  $0.181$  mg L<sup>-1</sup>), nitrate ( $3.15$  to  $8.50$  mg L<sup>-1</sup>), orthophosphate ( $1.38$  to  $1.90$  mg L<sup>-1</sup>), and total ammonia nitrogen ( $0.01$  to  $0.77$  mg L<sup>-1</sup>) levels compared to the commercial feed. Finally, the incorporation of EHC into the diet also protected the postlarvae from the acute hepatopancreatic necrosis disease-causing *Vibrio parahaemolyticus* by demonstrating the highest survival rate (63.33%) of the postlarvae compared to *Halamphora* sp. (mortality rate: 63.33%) and commercial feed (mortality rate: 100%) treatments after 72 h of the challenge test. The current findings highlighted the great potential of using EHC as live food for better growth performance of *P. monodon* postlarvae as well as the protection against virulent shrimp pathogens. © 2024 Elsevier B.V.

**Author Keywords**

Harpacticoid copepod; Live food; Microalgae; *Penaeus monodon*; Water quality

**Index Keywords**

diatom, growth rate, lipid, nitrate, water quality

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