

A holistic approach for selection of *Bacillus* spp. as a bioremediator for shrimp postlarvae culture.

ABSTRACT

Indigenous *Bacillus pumilus*, *B. licheniformis*, and *B. subtilis* were isolated from marine water and soil samples and investigated for potential bioremediation ability in *Penaeus monodon* culture. *Bacillus* spp. were selected based on their wide range of growth conditions, ease of mass culture, tolerance to total ammonia nitrogen (TAN), inhibition of pathogenic vibrios, nonpathogenicity, and ability to reduce TAN. Results showed that optimum growth of the selected *Bacillus* spp. occurred at 30 °C, pH 7.5, and 1.5% NaCl, and they secreted protease, amylase, and lipase. *Vibrio* spp. were also inhibited by 3 *Bacillus* spp. In addition, the selected *Bacillus* spp. had no pathogenic effect on shrimp postlarvae (PL) and were able to reduce TAN. They promoted better growth and survival in shrimp PL without water exchange. This study was a systematic approach undertaken for the selection of suitable *Bacillus* spp. as bioremediators for a *Penaeus monodon* culture system.

Keyword: *Bacillus*; Bioremediation; *Vibrio* spp.; *Penaeus monodon*; Shrimp postlarvae.