

Dietary supplementation use of *Bacillus cereus* as quorum sensing degrader and their effects on growth performance and response of Malaysian giant river prawn *Macrobrachium rosenbergii* juvenile towards *Aeromonas hydrophila*

ABSTRACT

This study was conducted to investigate the effects of dietary probiotic quorum sensing degrader *Bacillus cereus* on the growth performance, intestinal short-chain fatty acid levels, antioxidant status and histopathological response of *Macrobrachium rosenbergii* against *Aeromonas hydrophila*. *M. rosenbergii* juveniles were fed with 10⁴ cfu/g probiotic *B. cereus*, while the control group was fed without *B. cereus*. After 28 days of feeding, growth performance was significantly higher ($p < 0.05$) in prawns fed with *B. cereus* compared to the control group. Probiotic-fed prawns showed the highest propionic acid level, while no significant differences ($p > 0.05$) were observed for acetic acid or butyric acid levels. Dietary *B. cereus* supplementation significantly ($p < 0.05$) improved the superoxide dismutase (SOD) activity in the prawns. In the challenge study, no significant differences were observed between the treatments in survival and haemolymph SOD activity. However, histopathological observations of the hepatopancreas after *A. hydrophila* challenge showed hemocyte infiltrations and necrosis in the control prawns, while the probiotic-fed prawns showed an overall better hepatopancreatic condition. These findings indicate that dietary *B. cereus* can be an effective growth promoter in *M. rosenbergii* and mitigates a compromise to the hepatopancreatic integrity during pathogenic challenge.

Keyword: Quorum sensing degrader; *Bacillus*; *Macrobrachium rosenbergii*; Juvenile; 53 short-chain fatty acids; *Aeromonas hydrophila*