عنوان مقاله:

Application of Bacillus amyloliquefaciens as probiotic for Litopenaeus vannamei (Boone, ۱۹۳۱) cultivated in a biofloc system

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خلاصه مقاله:

Probiotics can improve growth, survival and resistance to pathogenic organisms of the cultivated species in aquaculture systems with water recirculation. However, their possible benefits on biofloc systems have been less studied. In this study, the benefits of Bacillus amyloliquefaciens bacterium, on a biofloc culture of Litopenaeus vannamei were evaluated. B. amyloliquefaciens was applied as dissolved in water. To our knowledge, no previous assays on biofloc systems have been published, and on recirculation systems it has only been tested mixed with feed. The objective of the present study was to evaluate the effect of B. amyloliquefaciens on water quality, growth parameters and the immune system of shrimp. Three concentrations of probiotic were tested in triplicate (۹.۴۸ × ۱۰۴, ۱.۹۰ × ۱۰۵, and ۳.۷۹ × ۱۰۵ cfu ml-۱) and were compared with the control (without probiotics). Water quality parameters such as nutrients and suspended solids were monitored. In L. vannamei, growth, survival and their immune system parameters (total protein concentration, cell number with apoptosis and percentage of granular and hyaline hemocytes) were studied. The results showed that the application of B. amyloliquefaciens did not produce significant differences in water quality or shrimp growth. However, it showed significant improvements in the immune system. As compared with the control treatment, an increase in the total protein concentration and granular hemocytes, and a decrease in the cell number with apoptosis in the hempolymph were observed. Thus, we can conclude that B. amyloliquefaciens provides greater resistance to shrimp against the attack of pathogens in biofloc systems.

کلمات کلیدی:

Growth parameters, Immunological parameters, Water quality, White shrimp