Efficacy of purple non-sulfur bacterium Afifella marina strain ME to control dissolved inorganic nutrients in aquaculture system

Abstract

Experiment was conducted to determine the possibility of using locally isolated purple non-sulfur bacterium Afifella marina strain ME to improve the dissolved inorganic nutrients (DIN) in Tilapia Oreochromis niloticus culture tank. The experiment was conducted for seven days without changing water. Ammonia (mg/L), nitrite (mg/L), nitrate (mg/L) and phosphate-phosphorus (mg/L) in the Tilapia culture tank were monitored. Sixteen tails of Oreochromis niloticus juveniles with mean weight of 0.7±0.05g were stocked in ten liter aquarium. Juveniles were fed with commercial feed twice daily by ad-libitum feeding method. Purple non-sulfur bacterium Afifella marina strain ME, and established probiotic commercial Bacillus with four inclusion levels, 0.005(g/L), 0.01(g/L), 0.02(g/L), and 0.03(g/L) were added everyday into culture tank. At the end of experiment no significant difference (P > 0.05) were observed among all the inclusion levels with the concentration of ammonia, nitrite, nitrate and phosphate. The lowest concentration of ammonia, nitrite, nitrate and phosphate were observed in both Afifella marina strain ME, and commercial Bacillus with the inclusion level of 0.03g/L. Obtained results were comparable with commercially established probiotics Bacillus sp. Locally isolated purple non-sulfur bacterium Afifella marina strain ME could be one of the potential candidate in controlling dissolved inorganic nutrients in aquaculture system.