Abstract

The present experiment was carried out to study the effects of dietary supplementation of chitosan and levamisole on the growth performance, non-specific immune responses and disease resistance of Nile tilapia (*Oreochromis niloticus*) in cage culture. Fish were divided into 4 groups before being fed for 12 weeks with unsupplemented commercial diet as the control (T1), 1% of chitosan (T2), 250 mg/kg feed of levamisole and 1% chitosan plus 250 mg/kg feed of levamisole (T4). Growth performance (specific growth rate and feed conversion ratio) and non-specific immune parameters including NBT reduction, lysozyme activity and complement activity were investigated. After 12 weeks of feeding, fish were challenged with *Streptococcus agalactiae* and cumulative mortality (%) was recorded. Results showed dietary supplementation of chitosan and levamisole enhanced the growth with better feed conversion ratio of all treated fish significantly compared to fish fed with non-supplemented diet. The lysozyme activity and complement activity were significantly enhanced in fish fed with 1% of chitosan, 250 mg/kg levamisole and 1% chitosan plus 250 mg/kg diet after 12 weeks. The cumulative mortality was found low in fish fed with chitosan or levamisole enriched diets than those of control against pathogen. These results suggest that administration of 1% chitosan or 250 mg/kg levamisole in the diet can be used as growth promoter, to enhance non-specific immune responses and improve resistance of Nile tilapia to *Streptococcus agalactiae*. The results of this research provide a contribution to the basic knowledge for health management in future aquaculture research of this fish species.