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Isolation of potential probiotic *Paenibacillus ehimensis* NPUST1 with bacteriocin activity and its effect on growth performance and immunity against *Streptococcus iniae* in Nile tilapia (*Oreochromis niloticus*)

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Probiotics used as immunostimulants is an emerging strategy in aquaculture for prophylactic biocontrol. In the present study, a probiotic *Paenibacillus ehimensis* NPUST1 producing antimicrobial substance was isolated from tilapia culture pond and characterized by biochemical analysis and 16S rDNA sequencing. The physicochemical properties of crude extracted antimicrobial substance revealed low pH and highly thermal tolerance. The antimicrobial activity of crude extracted antimicrobial substance exhibited broad spectrum against diverse aquatic pathogens, food spoilage, clinical pathogens and plant pathogen. The effect of dietary supplementation with *P. ehimensis* NPUST1 on the growth of Nile tilapia (*Oreochromis niloticus*) and immunity against *Streptococcus iniae* was evaluated. The results showed that Weight Gain (WG), Feed Conversion Ratio (FCR) and Feed Efficiency (FE) of Nile tilapia fed *P. ehimensis* NPUST1 for 2 months were significantly increased compared with those of the fish fed control diet. Nile tilapia fed *P. ehimensis* NPUST1 exhibited a higher survival rate than fish fed control diet following challenge by *Streptococcus iniae*. The immune parameters revealed that phagocytic activity, respiratory burst and Superoxide Dismutase (SOD) of head kidney leukocytes as well as the serum lysozyme activity of *P. ehimensis* NPUST1-fed Nile tilapia were significantly higher than fish fed the control diet for 2 months. These results indicate that dietary supplementation with *P. ehimensis* NPUST1 improved growth performance and enhanced immunity and disease resistance in Nile tilapia.

Biography

Shao-Yang Hu has earned his PhD degrees in Microbiology and Biochemistry from National Taiwan University and Postdoctoral studies in Institute of Cellular and Organismic Biology (ICOB), Academia Sinica. He is the Chief of Interdisciplinary Feature Development Center of National Pingtung University of Science and Technology (NPUST). He has published more than 20 papers in reputed journals.

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