In Vitro Antibacterial Effect of Lactobacillus plantarum Postbiotics Against Fish Bacterial Pathogens

ABSTRACT

The intensification of aquaculture farms leads to stressful conditions for fish. This causes the outbreak of bacterial diseases and lowers production in aquaculture. Probiotics and chemical treatments are effective, but it possesses a risk to the environment and human health. Postbiotics emerged to become one of the treatments for bacterial diseases. In this study, Lactobacillus plantarum GS12 and GS13 strains were used to determine the antibacterial effect of postbiotics on different pathogenic bacteria. The postbiotics were extracted and both strains show positive inhibition in the screening test. The postbiotics from both strains of L. plantarum were then used for further testing on minimum inhibitory concentration. Postbiotic from GS12 showed no inhibition activity, whereas GS13 has the lowest inhibition concentration of 8.0 µg ml^{-1} when tested on Aeromonas hydrohila and Vibrio harveyi, and 16.7 µg ml^{-1} when tested on A. salmonicida and V. parahaemolyticus. Postbiotic produced by L. plantarum GS13 had better capacity in terms of antibacterial effect compared to L. plantarum GS12. L. plantarum GS13 postbiotics may be useful against bacterial disease in the future. This study shows a potential alternative control measure for bacterial disease often occurring in aquaculture.