

Abstract

Biofilm-forming bacteria, including *Staphylococcus aureus* and *Salmonella typhimurium*, can persist on food-contact surfaces, increasing resistance to cleaning, disinfection, and antimicrobial agents, highlighting the need for alternative antimicrobial agents. This study evaluated the antibacterial, antibiofilm, and cytotoxic effects of aqueous Binahong (*Anredera cordifolia*) extract. The cytotoxicity was evaluated using the MTT assay on HaCaT cells, antibacterial activity was determined using the minimum inhibitory concentration (MIC) assay, and antibiofilm activity was assessed using the crystal violet biofilm inhibition assay. The aqueous extract exhibited no cytotoxic effects on HaCaT cells at the tested concentrations, indicating good biocompatibility. However, no MIC was observed against either bacterial species within the tested concentration range, and only limited inhibition of biofilm formation was detected without a clear concentration-dependent effect. In conclusion, the aqueous Binahong extract demonstrated low cytotoxicity but showed no apparent antibacterial or antibiofilm activity under the experimental conditions. However, these findings remain inconclusive because no biological replicates were included, making inferential statistical analysis inappropriate and preventing definitive conclusions regarding the extract's efficacy. Future studies should incorporate independent biological replicates, optimize the extraction method, evaluate higher extract concentrations, and perform quantitative antibiofilm analyses to better determine its potential as a natural antimicrobial agent.

Keywords: antibiofilm, Binahong extract, foodborne pathogen, food safety, MTT assay, antibacterial