Evaluating the invitro antibiofilm activity of *Aerva lanata* against gram-positive and gram-negative bacteria

B Preeja[1], D Bindu[2]

[1]Department of Microbiology, Bharath Institute of Higher Education and Research (BIHER), Chennai. [2]Department of Microbiology, SBMCH, Bharath Institute of Higher Education and Research (BIHER), Chennai

ABSTRACT

Introduction: Biofilms are syntrophic communities of microorganisms comprising both Gram-negative and Gram-positive bacteria. Biofilm formation plays a critical role in urinary tract infections and presents a significant challenge in clinical settings due to increased resistance to conventional antibiotics. This study evaluated the antibiofilm activity of the whole plant extract of *Aerva lanata (A. lanata)* against *Staphylococcus aureus (S. aureus)* and *Escherichia coli (E. coli)*. **Materials and Method:** The plant *A. lanata* was collected from the CSIR-National Institute for Interdisciplinary Science and Technology (NIIST), Trivandrum, Kerala. Ethanol extract of the whole plant was used to test against *S. aureus* and *E. coli* biofilms, with comparisons made to control or untreated bacterial cells. The biofilm samples were treated with different concentrations of the extract: 62.5 µg, 125 µg, 250 µg, 500 µg, and 1000 µg. Biofilm activity was assessed using the crystal violet assay and bacterial viability (live dead cell assay) was checked using a fluorescence microscope (Olympus CKX41 with Optika Pro5 CCD camera). **Results:** The biofilm treated with A. lanata showed over 80% inhibition against *S. aureus* and *E. coli*, demonstrating the efficacy of A. lanata against biofilm formation by both Gram-positive and Gram-negative organisms. **Conclusion:** Plant extract of *Aerva lanata* has shown to effectively inhibit biofilm formation, suggesting its potential use as a natural alternative to synthetic drugs. The extract's significant biofilm activity and lower side effects, combined with its cost-effectiveness, highlight its promise as a natural source of antibiofilm agents, offering a potential alternative to current treatment strategies.