

ABSTRACT

This research work was conducted to synthesize silver nanoparticles from two grasses *Imperata cylindrica* (LINN.) RAEUSCHEL and *Dicanthium annulatum* (FORSSK.) STAPH and their antibacterial activity against oral pathogens were determined. Characterization of AgNPs was done by UV-Visible Spectroscopy, FTIR, XRD and SEM with EDX analysis. UV visible spectroscopy showed the maximum absorption peak of both types of AgNPs at 445nm and 455nm respectively. XRD analysis revealed the crystalline nature of the particles. The average size of *Imperata cylindrica* was 2.77nm and AgNPs of *Dicanthium annulatum* was 3.1nm. SEM confirmed the shape and morphology of both AgNPs which was tetragonal and cubic for *Dicanthium annulatum* and spherical and cubic for *Imperata cylindrica*. EDX analysis evaluated highest percentage of silver in both AgNPs. The FTIR analysis indicated the attached functional groups with the surface of AgNPs synthesized from *I. cylindrica* and *D. annulatum*. Antibacterial activity of AgNPs of *I. cylindrica* and *D. annulatum* was evaluated at three different concentrations 500 µg/ml, 700 µg/ml and 900µg/ml against gram negative (*Escherichia coli*, *Klebsiella pneumoniae*) and gram positive (*Bacillus subtilis* and *Staphylococcus aureus*) bacteria. Herbal mouthwash was formulated by extract of stevia and peppermint along with essential ingredients and observed its antibacterial activity against oral pathogens. Comparative evaluation of antibacterial activity of mouthwash and Mouthwash incorporated with AgNPs gave the best antibacterial activity against *Escherichia coli* and *Staphylococcus aureus*.