

## ABSTRACT

*The synthesis of silver nanoparticles (AgNPs) was successfully carried out using bay leaf (Syzygium polyanthum) extract as a bioreductant with the help of microwave radiation. The synthesis of silver nanoparticles with bay leaf extract was carried out with variations in power and time during microwave irradiation. The power variations used were 100, 180, 300, 450, and 600 watts while the time used was 1, 2, 3, 4, and 5 minutes producing samples with a brownish yellow color. Characterization of silver nanoparticles included UV-Vis, FTIR, and SEM-EDX. UV-Vis characterization at power variations showed Surface Plasmon Resonance (SPR) between 422-428 nm and at time variations showed SPR between 424-430 nm. FTIR characterization showed the formation of an Ag-O spectrum at a wave number of 453.63 cm<sup>-1</sup>. SEM images showed irregular morphology of the resulting silver nanoparticles and some uneven distribution. The EDX spectrum analysis results indicated the presence of silver (Ag) with a dominant peak at around 3 keV. Antibacterial activity was tested using the disc diffusion method on Eschericia coli and Staphylococcus aureus bacteria. The disc diffusion test results showed a zone of inhibition diameter of 3.58 mm for Eschericia coli and 1.25 mm for Staphylococcus aureus.*

**Keywords:** *silver nanoparticles, microwave irradiation, disc diffusion method, Eschericia coli bacteria, Staphylococcus aureus bacteria*