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Synthesis of Silver Nanoparticles by ecofriendly nvironmental method using Piper nigrum, Ziziphus spina-christi, and Eucalyptusglobulus extract

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Abstract

In the present study, silver nanoparticles (AgNPs) were prepared using an eco-friendly method synthesized in a single step biosynthetic using leaves aqueous extract of Piper nigrum, Ziziphus spina-christi, and Eucalyptus globulus act as a reducing and capping agents, as a function of volume ratio of aqueous extract(100ppm) to AgNO3 (0.001M), (1: 10, 2: 10, 3: 10). The nanoparticles were characterized using UV-Visible spectra, X-ray diffraction (XRD). The prepared AgNPs showed surface Plasmon resonance centered at 443, 440, and 441 nm for sample prepared using extract Piper nigrum, Ziziphus spina-christi, and Eucalyptus respectively. The XRD pattern showed that the strong intense peaks indicate crystalline nature and face centered cubic structure of silver nanoparticles for all samples were prepared. The average crystallite size of the AgNPs was 20-45 nm. Morphology of the AgNPs were carried out using FESEM. Observations show that the AgNPs synthesized were spherical(Cluster) in shape. with diameters of 13 to 53 nm.

Key words ;AgNPs; Surface plasmon resonance; Piper nigrum ;Ziziphus spinachristi; Eucalyptus.