



ABSTRACT

This study merged the distinctive properties of silver nitrate with the extract of a novel species of piperaceae family i.e., *Piper cubebe* to biologically synthesize piper-cubeb based silver nanoparticles. The synthesis followed a green, non-hazardous, facile, and economical approach. Sunlight exposure ensured the rapid synthesis that merely took place in 15 minutes. A vivid color change served as a primary indicator of accomplished synthesis and it was further authenticated by UV-visible analysis as well as FTIR results. 440-445 nm wavelength range by UV-vis spectrophotometer and FTIR graph assured the intended synthesis. SEM analysis examined the morphological details of nanoparticles. The nanoparticles appeared spherical and exhibited a favorable size range of 18-27 nm. Elemental composition of the nanoparticles was examined via EDS analysis. DPPH and ABTS assays were conducted to explore the radical scavenging traits of synthesized nanoparticles. The antimicrobial potential of nanoparticles was also explored employing agar well diffusion method using both gram-positive and gram-negative pathogenic strains. The biosynthesized nanoparticles were found to be excellent antioxidants as well as anti-microbial agents.