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Synthesis of Bimetallic Nanoparticles (Au–Ag Alloy) Using *Commelina nudiflora L.* Plant Extract and Study its on Oral Pathogenic Bacteria

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Abstract In present study, biosynthesis of Au–Ag alloy nanoparticles (NPs) using *Commelina nudiflora* aqueous extract as a stabilizing and reducing agent is reported. The crystalline nature, size, shape and composition of synthesized Au–Ag alloy NPs were characterized by UV–Vis spectrophotometer, field emission scanning electron spectroscopy, energy dispersive X-ray spectroscopy, transmission electron microscope, X-ray diffraction and fourier transform-infrared spectroscopy (FT-IR). The synthesized Au–Ag alloy NPs exhibited different ranges of sizes between 20 and 80 nm with different morphology such as spherical, rod and triangular. FT-IR spectral data revealed that the plant extract contains amine, alcohol, phenol and alkane molecules which are critically involved in the formation of Au–Ag alloy NPs. Finally, the biosynthesized Au–Ag alloys NPs exhibited a strong minimum inhibitory, minimum bactericidal activity against selected oral pathogenic bacteria. The present study gives an important suggestion on plant extract mediated synthesis bimetallic NPs (Au–Ag alloy) emphasis on oral pathogenic bacteria activities.

Keywords *Commelina nudiflora* · Bimetallic · FESEM EDX · XRD · FTIR · Oral pathogenic bacteria

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