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ORIGINAL ARTICLE

Biogenic nanoparticles bearing antibacterial activity and their synergistic effect with broad spectrum antibiotics: Emerging strategy to combat drug resistant pathogens

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Abstract The present study emphasizes on synthesis of bimetallic silver–gold nanoparticles from cell free supernatant of *Pseudomonas veronii* strain AS41G inhabiting *Annona squamosa* L. The synthesized nanoparticles were characterized using hyphenated techniques with UV–Visible spectra ascertained absorbance peak between 400 and 800 nm. Possible interaction of biomolecules in mediating and stabilization of nanoparticles was depicted with Fourier transform infrared spectroscopy (FTIR). X-ray diffraction (XRD) displayed Bragg's peak conferring the 100, 111, 200, and 220 facets of the face centered cubic symmetry of nanoparticles suggesting that these nanoparticles were crystalline in nature. Size and shape of the nanoparticles were determined using Transmission electron microscopy (TEM) micrograph with size ranging from 5 to 50 nm forming myriad shapes. Antibacterial activity of nanoparticles against significant human pathogens was conferred with well diffusion assay and its synergistic effect with standard antibiotics revealed 87.5% fold increased activity with antibiotic "bacitracin" against bacitracin resistant strains *Bacillus subtilis*, *Escherichia coli* and *Klebsiella pneumoniae* followed by kanamycin with 18.5%, gentamicin with 11.15%, streptomycin with 10%, erythromycin with 9.7% and chloramphenicol with 9.4%. Thus

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