

2nd International Conference and Exhibition on Pharmacognosy, Phytochemistry & Natural Products

August 25-27, 2014 DoubleTree by Hilton Beijing, China

Biosynthesis of silver nanoparticles using lemongrass (*Cymbopogon flexuosus* Steud) wats leaf extract: Phytochemical composition and antibacterial properties

Deepak Ganjewala, Ruchika Mittal, Ashish Kumar Gupta, Tufail Khan and Martha Premlatha
Amity University, India

Nanobiotechnology is rapidly growing areas of research in which biological systems are transformed to enhance their bioactive potential through synthesis of nanoparticles. Nanobiotechnology could be of great potential for countries like India which has rich biological diversity may be used as a key resource for novel biotechnological products. Nanoparticles (NPs) owing to their size and structural similarity to biological molecules have wide biomedical applications. Among the NPs, silver NPs (AgNPs) are very promising as they exhibit potent antimicrobial activity against bacteria, fungi, protozoa, and viruses. In recent times the antibacterial activity of many medicinal plants has been recognized, in the present study we attempt to synthesize non-toxic AgNPs using the lemongrass (*Cymbopogon flexuosus* family Poaceae) leaf extract by bioreduction method. Synthesis of nanoparticles was monitored by ultraviolet visible spectroscopy which showed peak at 420-470 nm indicates the biosynthesis of yellow-brown color AgNP solution. Dynamic Light Scattering (DLS) spectrum showed AgNP colloidal solution z-average (nm) size of 40-70 nm. The antimicrobial potential of the plant extract and synthesized AgNPs against the drug resistant bacteria, such as *Acinetobacter baumannii*, *Staphylococcus aureus* and *Pseudomonas aeruginosa* were confirmed by agar well diffusion method. Antibacterial efficacy of the synthesized AgNPs solution expressed as zone of inhibition (mm) was as follows *S. aureus* (24 mm) > *P. aeruginosa* (21 mm) > *A. baumannii* (11 mm). Phytochemical investigation of plant extract and synthesized AgNPs colloidal solution by spectrophotometric method has revealed the presence of secondary metabolites viz., phenolics (55.75 mg GAE /g DW), flavonoids (18.5 mg QE /g DW), anthocyanin (21.4 mg QE /g DW) and proanthocyanidins 12.1 mg CE /g DW). Thus the studies revealed enhanced levels of phytoconstituents and antibacterial potential of synthesized AgNPs of lemongrass leaf extracts against drug resistant bacteria and pave the way for their future applications.

deepakganjewala73@yahoo.com