

## The poisonous plant *Cleistanthus collinus* mediated silver nanoparticles to use as nanodrug: A novel approach in green nanobiotechnology

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In the recent years, nanoparticles have been extensively studied because of their unique size dependant electronic, optical and catalytic properties. A variety of chemical and physical procedures could be used for synthesis of metallic nanoparticles. However, these methods are fraught with many problems including use of toxic solvents, generation of hazardous by-products, and high energy consumption. Accordingly, there is an essential need to develop environmentally benign procedures for synthesis of metallic nanoparticles. A promising approach to achieve this objective is to exploit the array of biological resources in nature. Here, bio-inspired silver nanoparticles (AgNPs) were synthesized with the aid of a novel, non-toxic, eco-friendly biological material using the plant extract of *Cleistanthus collinus* as potential phyto reducer. The prepared AgNPs were confirmed by using UV-visible spectra, fourier transform infrared spectroscopy (FTIR), X-ray diffraction (XRD), scanning electron microscopy (SEM) and transmission electron microscopy (TEM). The obtained data confirms that the AgNPs were shown to be crystalline in nature and spherical in shape with the size ranging from 20 to 40 nm. The in vitro antioxidant activity of AgNPs showed a significant effect on free radical scavenging potential. The cytotoxicity study reveals 90% of cell proliferation inhibition against A549 lung cancer cell line and less toxicity was observed against HBL100 normal cells. The histopathological study was carried out using in vivo mice model and it demonstrates that poisonous plant generated AgNPs can be used as nanodrug and it's very safe to living systems.

### Biography

Nagarajan Kanipandian is doing Ph.D. in the field of green-nanobiotechnology under the guidance of Dr.R.Thirumurugan, Department of Animal Science, School of Life Sciences, Bharathidasan University, Tiruchirappalli, Tamil Nadu, India. He is the junior research Fellow in UGC-DAE CSR funded project. He received his B.Sc., (Microbiology) and M.Sc., (Biotechnology) degrees from Madurai Kamaraj University and Periyar University, Salem. The aim of his research is to develop the eco-friendly method for metal nanoparticles synthesis to eradicate the cancer cells without side effects to the living systems.

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