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Silver nanoparticles from *Tinospora cordifolia* as an antibacterial agent

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Abstract

In recent years a number of physical, chemical and biological methods were applied for the synthesis of silver nanoparticles as they are known to have bactericidal effects. In this report, we present the synthesis of silver nanoparticles prepared by reduction of silver nitrate from aqueous solutions of *Tinospora cordifolia* containing a mixture phytochemical which acts as reductants. Synthesis of silver nanoparticles from plant extract is a simple and ecofriendly method. The preliminary characterization was done with the help of UV-VIS spectrophotometer, further with Scanning Electron Microscopy (SEM), Fourier Transform Infrared (FTIR) Spectroscopy. Silver nanoparticles gave maximum absorption at 425nm . FTIR spectra of a leaf extract before and after the synthesis of nanoparticles were determined to allow identification of possible functional groups responsible for the reduction of silver nitrate to silver nanoparticles. The antibacterial activity was assessed against *Escherichia coli* and *Klebsiella pneumonia* using Agar well diffusion method and minimum inhibitory concentration (MIC) was determined by the microbroth dilution method. The zone of inhibition and MIC observed was 12-22 mm and 12.5-25µg/ml respectively. The final results showed that the silver nanoparticles exhibit significant antibacterial activity. Therefore, we concluded that silver nanoparticles synthesized from medicinal plant extract could be used as an effective antibacterial agent.

Biography

Prof. J. P. Yadav has completed his Ph.D. in the year 1991 from M. D. University, Rohtak, Haryana, India. He has been awarded Prof. R.P. Roy Young Scientist Award by Society of Cytology and Genetics, India. He served as Head, Department of Genetics, M.D.University, Rohtak from 04/01/2010 to 03/01/2013. He has published more than 110 papers and book chapters in reputed journals. He has submitted 59 gene sequences to NCBI and accession numbers have been already allotted to these sequences. He has been attended and presented papers in more than 50 conferences. He has visited South Africa and Ireland. He has chaired sessions at National and International conferences. He is reviewers of more than 25 journals. Presently, he is Coordinator of DST-FIST, UGC-Innovative and UGC SAP Programme.