

Evaluation of antimicrobial activity of silver nano particles of leaf, seed and fruit extracts of *Syzygium cumini* L

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Abstract

Syzygium cumini L belongs to the family Myrtaceae commonly known as Jamun, jambolena and in telugu as it called Neeredu is one of the widely used medicinal plant in the treatment of diabetes. Nanotechnology is a novel and promising theme in the field of phytomedicine and Pharmacognosy. The present study has been focused on the synthesis of silver nanoparticles (Biological synthesis) of leaf, seed and fruit extracts of *S.cumini* and to observe their antimicrobial activity. An aqueous solution of 1mM AgNO₃ is used to prepare nanoparticles and the synthesized nanoparticles were characterized by performing UV-Vis spectrophotometer, SEM and TEM. UV visible spectroscopic analysis revealed the Surface Plasmon Resonance (SPR), the final reaction product confirming the reduction of AgNO₃ to silver nanoparticles. Approximately Spherical, triangular and cubical images are observed in SEM analysis of silver nano particles prepared from leaf, seed and fruit extracts of *Syzygium cumini*. TEM analysis also revealed formation of oval, globular and cubical images indicating the formation of silver nano particles. Further antimicrobial activity was evaluated by disc diffusion method with silver nano particles prepared from leaf, seed and fruit extracts of *Syzygium cumini*. Among all the extracts tested, nano particles from seed extracts showed more antibacterial activity in the order *Psuedomonas*, followed by *Bacillus*, *Klebsiella*, *Staphylococci* and *E.coli*. Seed extracts also showed more antifungal activity against the fungi *Rhizopus*, *Mucor*, *Aspergillus niger* and *Aspergillus flavus*. Comparatively nano particles from leaf extracts of *S.cumini* showed less antibacterial activity than the nano particles prepared from seed and fruit extracts. This study makes evidence that leaf, seed and fruit extracts of *Syzygium cumini* acts as an excellent capping agent for the formation of silver nanoparticles and showed immense biological activities. Hence, these Ag NPs can be used as antimicrobial agent in treating many medical complications.

Key words: Phytochemicals, *Syzygium cumini* L, antimicrobial activity, AgNPs.