

## Comparative study of silver and gold nanoparticles of *Viscum album* and its antimicrobial activity

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### Abstract:

Biological synthesis of silver and gold nanoparticles of *Viscum album* was compared in current research work. The comparative study revealed that crude leaf extract of *V. Album* shows that as compared to silver the gold metals are easily reduce to nano level. Different characterizations were carried out to confirm the synthesis of nanoparticles. UV visible spectroscopy revealed that the synthesized nanoparticles are smaller in size, spherical in shape and dispersed in reaction medium. Both samples give a sharp peak at exact lambda max, specified for gold and silver. SEM analysis shows that both AuNPs and AgNPs are spherical and rounded in morphology. FTIR analysis shows the presence of various functional groups which are responsible for the synthesis of nanoparticles. The synthesized nanoparticles were further evaluated for antifungal and antibacterial activities. The test samples were measured against the standard antibiotic cefixime. Interesting both test shows good antimicrobial activity as compared to standard. From current work it is concluded that crude extract of *V. Album* shows strong reducing and antimicrobial power. Plants contain different important phytochemicals that can be used as a potential treatment for various ailments including cancer. The green synthesis of silver nanoparticles from the extract of different plant parts has gained a wide range of engrossment among the researchers due to its unique optical and structural property. The aim of this study is green synthesis of silver nanoparticles from the aqueous leaf extract of pomegranate (*Punica granatum*) and to investigate its anticancer activity on human cervical cancer cells (HeLa). The synthesis of silver nanoparticle was depicted by the colour change from golden yellowish to dark brownish, UV-visible spectral

analysis gave a characteristic surface plasmon absorption peak at. Further morphological characterization was done by Zeta potential where the size analysis was depicted to be 46.1 nm and zeta potential as. Fourier transform infrared spectroscopy (FTIR) inferred 3 intense sharp peaks at,,, confirmed the presence of flavonoids and polyphenols. The scanning electron microscopy (SEM) analysis with energy diffraction spectroscopy (EDS) confirmed the presence of silver nanoparticles with size ranged from to. X-ray diffraction (XRD) confirmed the crystallographic nature of silver. The cell proliferation activity of nanoparticles was tested by 3, -4, 5 dimethylthiazol-2, 5 diphenyl tetrazolium bromide (MTT) assay where the inhibitory concentration () was found at inhibiting of HeLa cell line. The anticancer activity of nanoparticles was determined by lactate dehydrogenase (LDH) assay where showed of cytotoxicity. Furthermore, the anticancer property of nanoparticles was confirmed by the DNA fragmentation assay. Six viscotoxins in pure form from *Wscum aZbum L.* have been isolated and their toxicity compared by using a viscotoxin sensitive Yoshida cell line. Four of them are the known viscotoxins A2, A3, B and 1-PS, whereas the other two appear to be new. The six viscotoxins were cytotoxic but varied in potency. Cytotoxicity of the extracts from the three European subspecies of *K album* depended on the qualitative and quantitative composition of these viscotoxins. A good correlation of the cytotoxicity calculated on the basis of the content of viscotoxins present in the extracts with that measured by the Yoshida cell assay was observed. The viscotoxin sensitive Yoshida cell line is a suitable system for detecting the viscotoxin dependent cytotoxicity of mistletoe extracts.