عنوان مقاله:

Biochemical profiling of microbes inhibiting Silver nanoparticles using symbiotic organisms

محل انتشار:

مجله بین المللی ابعاد نانو, دوره 9, شماره 3 (سال: 1397)

تعداد صفحات اصل مقاله: 13

نویسندگان:

Pramila Khandel - *Bio-resource Tech Laboratory, Department of Botany, Guru Ghasidas Vishwavidyalaya, Bilaspur, Chhattisgarh, ۴۹۵۰۰۹, India.*

Sushil Kumar Shahi - *Bio-resource Tech Laboratory, Department of Botany, Guru Ghasidas Vishwavidyalaya, Bilaspur, Chhattisgarh, ۴۹۵۰۰۹, India.*

Leeladhar Kanwar - *Bio-resource Tech Laboratory, Department of Botany, Guru Ghasidas Vishwavidyalaya, Bilaspur, Chhattisgarh, ۴۹۵۰۰۹, India.*

Ravi Kumar Yadaw - *Bio-resource Tech Laboratory, Department of Botany, Guru Ghasidas Vishwavidyalaya, Bilaspur, Chhattisgarh, ۴۹۵۰۰۹, India.*

Deepak Kumar Soni - *Bio-resource Tech Laboratory, Department of Botany, Guru Ghasidas Vishwavidyalaya, Bilaspur, Chhattisgarh, ۴۹۵۰۰۹, India.*

خلاصه مقاله:

Silver nanoparticle therapeutics using symbiotic organisms can offer solutions to the current obstacles in antimicrobial therapies, because of cost-effective and eco-friendly properties over chemical and physical methods. In this study, we aim to synthesize silver nanoparticles using lichen (Parmotrema tinctorum) extract and evaluation of its antibacterial properties. Synthesized silver nanoparticle were characterized on the basis of morphology, size, shape and nature by UV-visible spectroscopy, Transmission electron microscopy (TEM), Particle size analyzer, Fourier transform infrared spectroscopy (FTIR) and X-ray diffraction (XRD) analysis. TEM analysis showed that synthesized silver nanoparticles were spherical in shape with maximum particles in size range within ۱۵ ± ۵.۱ nm. Prolonged stability of synthesized silver nanoparticles was due to the presence of capping and stabilizing agent in form of biomolecules, which were confirmed by FTIR analysis. Furthermore, the bio-potentiality of synthesized silver nanoparticles was done against five pathogenic bacteria viz., Pseudomonas aeruginosa, Staphylococcus aureus, Escherichia coli, Bacillus subtilis and Klebsiella pneumoniae usingthe agar well diffusion method. On the basis of zone of inhibition we can say that silver nanoparticles had antibacterial properties. Our results suggested that, prepared silver nanoparticle might be used for production of antibiotics and applied as potential microbial cell inhibitors.

کلمات کلیدی:

antibacterial activity, biosynthesis, silver nanoparticles, Biochemical profiling, Lichen extract