عنوان مقاله:

Biogenic synthesis, characterization and pharmacological study of silver nanoparticles using an extract of Xanthium strumarium seeds

محل انتشار:

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خلاصه مقاله:

A novel approach for utilization of seed waste is attempted in the present investigation. As the fabrication of nanomaterial using physiochemical methods have hazardous and toxic impacts on the environment, there is a vital demand for an innovative and well organized, Eco-friendly, sustainable and greener synthetic protocol for their synthesis by applying safer, renewable and inexpensive materials. This research study discuses the rapid photosensitized biosynthesis of silver nanoparticles using aqeous extract of seeds of Xanthium strumarium. The reaction was carried out in ambient sunlight. As the pathogenic organisms are getting evolved day by day due to mutation and gaining antibiotic resistance, an important industrial sector of nanoscience deals with the preparation and plays a decisive role in study of nanoparticles. Further investigation of the formation of nanoparticle was monitored periodically by UV-Vis spectroscopy. Fourier-transform infrared (FT-IR), X-ray diffraction (XRD), energy dispersive X-ray spectroscopy (EDS), selected area electron diffraction (SAED) results confirmed the crystalline nature while transmission electron microscopy (TEM) analysis revealed the shape of polydispersed nanoparticles were predominantly spherical. The antioxidant properties were tested by free radical scavenging ability on ۲,۲-diphenyl-۲-picrylhydrazyl (DPPH) method .The antimicrobial property of the synthesized NPs tested against pathogens such as E.coli, S.typhi, Pseudomonas and S.aureus by disc diffusion method. The EDX reveals a strong signal at ۳ keV. Assembling of nanoparticles and to study the effect of rate of bioreduction of Ag+ ions this conventional approach appears to be very cost effective.

کلمات کلیدی:

Green synthesis Silver nanoparticles Antioxidant Eco, friendly method Xanthium strumarium