عنوان مقاله:

Biosynthesis of Silver nanoparticles from Actinomycetes for therapeutic applications

محل انتشار:

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خلاصه مقاله:

Silver is composed of a large percentage of silver oxide due to their large ratio of surface to bulk silver atoms. Silver nanoparticles have been a potent antibacterial, antifungal, anti-viral and anti-inflammatory agent. A simple, eco-friendly, inexpensive biosynthetic method was employed to synthesize silver nanoparticles. The present study aimed at the comparative study of silver nanoparticles synthesized through microbial and chemical methods. A microbial route to synthesize silver nanoparticles by Actinomycetes sp. was done. Actinomycetes are aerobic, Gram-positive bacteria, generally exhibiting branched filamentous growth and contain high guanine plus cytosine content in their DNA. Chemical methods were employed to synthesize silver nanoparticles. Chemical reduction of silver ions (Ag+) using sodium borohydride in aqueous solution generally yields silver nanoparticles with particle diameters of several nanometers. It is observed that reduction is slow in chemical methods as compared to rapid microbial synthesis of silver nanoparticles. The obtained silver nanoparticles were characterized using UV-vis spectroscopy and TEM. TEM images of microbially synthesized silver nanoparticles were of smaller size (۱۰-۲۰ nm) compared to chemical methods (۶۰-۸۰ nm). The microbially synthesized silver nanoparticles using Actinomycetes were found to be highly toxic to bacteria and it was found that smaller silver nanoparticles synthesized by microbial route had a greater antibacterial .activity when compared to their chemical moieties

کلمات کلیدی:

Silver nanoparticles, Microbial synthesis, Green synthesis, Chemical synthesis, Actinomycetes, Antibacterial activity