

عنوان مقاله:

Scrutinizing The Applications Of Mangrove Actinomycetes Mediated Biosynthesized Copper Nanoparticles

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خلاصه مقاله:

Recently, there has been an increase in research interest in metal nanoparticles and their synthesis because of their various applications in different industrial areas. The current study deals with the Actinomycetes-mediated synthesis of copper nanoparticles (CuNPs) isolated from mangrove soil and to further access its application in different fields. Eight different soil samples were collected from three different mangrove sites located in Mumbai. A total of 15 different Actinomycetes isolates were obtained from soil samples and studied in the present investigation and were screened for metal tolerance. It was found that out of 15 isolates, only 3 were able to tolerate the highest metal salt concentration i.e. 10-1M. The synthesized CuNPs were further investigated with various characterizations such as UV-Vis spectroscopy, FTIR, and XRD. The identification of isolate GRC1 was done as per Bergey's Manual of Systematic Bacteriology Volume 5 for preliminary identification of Actinomycetes and was identified as Streptomyces sp. This isolate was further characterized by Vitek MS and it was identified as Streptomyces verticillus. The inhibition zone by biosynthesized CuNPs was significantly greater when compared with standard antibiotics and CuSO₄. The calculated degradation efficiency after 5hrs of incubation was 59.67% and 96.26% for Red MAB and Reactive green, respectively. Prevention of biofilm formation by CuNPs was confirmed by microscopic technique and significant inhibition of biofilm was observed. Thus, the mangrove Actinomycetes mediated bio-fabrication of CuNPs should gain much attention .because of their unique properties like antimicrobial, anticancer, catalytic activity, wound healing, and antifouling

کلمات کلیدی:

Copper nanoparticles, Actinomycetes, Mangroves, Biosynthesis, Antimicrobial, Dye degradation, Antifouling

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