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Antimicrobial investigation of selected soil actinomycetes isolated from unexplored regions of Kashmir Himalayas, India

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1 **Antimicrobial investigation of selected soil actinomycetes isolated from unexplored**
2 **regions of Kashmir Himalayas, India**

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18 **Abstract**

19 The aim of the present study was to isolate and evaluate the antimicrobial potential of soil
20 actinomycetes of Kashmir Himalayas. The secondary metabolites of actinomycetes are the
21 prominent source of antibiotics. A total of 121 morphologically different actinomycete strains
22 were isolated and screened for antimicrobial activity against various human pathogens. The
23 ethyl acetate extract of fermented broth an actinomycete strain, identified as *Streptomyces*
24 *pratensis* exhibited significant antimicrobial activity against *Staphylococcus aureus* ATCC
25 29213 with MIC 0.25µg/ml and *Mycobacterium tuberculosis* Strain H37Rv with MIC
26 0.062µg/ml. The strain *S. pratensis* IIIM06 was grown on large scale and their broth was
27 extracted with ethyl acetate. The extract was subjected to various chromatography techniques
28 which led to the isolation of four compounds whose structures were established as
29 actinomycin C1, actinomycin C2, actinomycin C3 and actiphenol on the basis of spectral data
30 analysis. Actinomycin C1, C2 and C3 exhibited potent antimicrobial activity against *S.*
31 *aureus* as well as *M. tuberculosis*. The isolated indigenous actinomycetes exhibited good
32 antibacterial activity and the study reveals that IIIM06 is a promising strain and could be of
33 great potential for industrial applications.

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