Isolation, identification and screening of actinobacteria in volcanic soil of deception island (the Antarctic) for antimicrobial metabolites

Abstract

This project aimed to isolate and characterize volcanic soil Actinobacteria from Deception Island, Antarctic. A total of twenty–four Actinobacteria strains were isolated using four different isolation media (Starch casein agar, R2 agar, Actinomycete isolation agar, Streptomyces agar) and characterized basing on 16S rRNA gene sequences. Tests for second– arymetabolites were performed using well diffusion method to detect antimicrobial activities against eight different pathogens, namely Staphyloccocus aureus ATCC 33591, Bacillusmegaterium, Enterobacter cloacae, Klebsiella oxytoca, S. enterica serotype Enteritidis, S. enterica serotype Paratyphi ATCC 9150, S. enterica serotype Typhimurium ATCC 14028 and Vibrio cholerae. Antimicrobial properties were detected against Salmonella paratyphi A and Salmonella typhimurium at the concentration of 0.3092±0.08 g/ml. The bioactive strains were identified as Gordonia terrae, Leifsonia soli and Terrabacter lapilli. Results from this study showed that the soil of Deception Island is likely a good source of isolation for Actinobacteria. The volcanic soil Actinobacteria are potentially rich source for discovery of antimicrobial compounds.