ABSTRACT

Multi-drug resistant pathogens are a leading cause of human morbidity and mortality all over the world. We isolated actinomycetes from the soils of Menengai crater and characterized selected actinomycetes using classical and molecular techniques. Actinomycetes were isolated using starch casein (SC), Luria Bertani (M1) and starch nitrate (SN) agar media. Screening for antibiotic activity was carried out by primary screening using perpendicular method and secondary screening using agar plug technique against selected bacterial and fungal pathogens. The best actinomycetes based on size of inhibition and broad spectrum of activity coded PAN 25, PAN 41, PAN 75 and PAN 110 were selected for further bioassay. The selected actinomycetes were characterized using molecular technique that involved extraction of 16S rRNA gene, PCR and phylogenetic studies. Data was analyzed using Statistical Package of Social Sciences (SPSS) software. There was a significant difference in the number of actinomycetes isolated using the three types of media ($F=3.315$ $P=0.04218$). There was no significant difference in the zones of inhibition between the isolates PAN 25, PAN 41, PAN 75 and PAN 110 ($F=0.8928$ $P=0.5431$). Molecular characterization revealed that isolate PAN 25 had 99% similarity with Streptomyces variabilis, isolate PAN 41 (S. indiaensis), isolatePAN 75 (S. luteogriseus strain ZG728) and isolate PAN 110 (S. acrimycini strain K30). Menengai crater had actinomycetes that inhibited growth of the selected actinomycetes. Large scale production of antibiotics from the selected actinomycetes should be carried out.