Isolation and characterization of Antarctic psychrotroph Streptomyces sp. strain INACH3013

Abstract

An actinobacterial strain with antimicrobial activity, INACH3013, was isolated from soil collected from Antarctica. The taxonomic status of the isolate was established using a polyphasic approach. The strain was identified as belonging to the genus Streptomyces based on the scanning electron microscopic observation and partial 16S rRNA gene sequence analysis. The sequence analysis revealed that strain INACH3013 is closely related to Streptomyces fildesensis (99.8%), S. beijiangensis (98.1%) and S. purpureus (97.2%). A phylogenetic tree constructed using the partial 16S rRNA gene sequences of strain INACH3013 and closely related strains revealed that INACH3013 fell into the same subclade as S. fildesensis and S. purpureus. Strain INACH3013 was observed to be psychrotolerant, slightly halotolerant (up to 5% NaCl) and capable of inhibiting the growth of seven Gram-negative and eight Gram-positive foodborne pathogens. The GenBank/EMBL/DDBJ accession number for the 16S rRNA gene sequence of the strain is KJ624755.