

Abstract:

Three antagonistic actinomycetes coded as 14P, 28P and CS35 were isolated from the soil and identified based on morphological, physiological and color formation on Czapeks Dox agar, inorganic salt starch agar and glycerol asparagine agar. The antibiotic metabolites from these isolates were characterized by separation in different solvent systems, performing bioautography, partial purification and freeze drying to enhance their antimicrobial activity. The three isolates showed differences in the carbon utilization tests and isolate coded 14P utilized all the carbon sources tested, isolate 28P utilized all the carbon sources tested except, cellulose, whereas isolate CS35 utilized all the carbon sources except inositol, raffinose and rhamnose. Isolate 28P had rectus type of spore bearing hyphae while isolate 14P formed both rectus and flexuous type whereas isolate CS35 formed only the flexuous type of hyphae. Melanin production was observed only from isolate 14P and CS35 and all the isolates were identified as belonging to the genus *Streptomyces*. Concentration of the antibiotic metabolites by partial purification and freeze drying resulted in enhanced antimicrobial activity with an overall increase in activity of 21.5 and 20.1%, respectively. The antibiotic metabolites were separated by the various solvent systems with Hexane-Methanol-Water (4: 3:3) giving the best separation. The bioautograms revealed the presence of one active compound in isolates CS35 and 14P and two active compounds in isolate 28P. Actinomycetes are a diverse group of organisms and they produce antimicrobial compounds that vary greatly in terms of composition and biological activity