Study of Anti-fungal Effects of Soil-Borne Streptomyces sp. Isolated in Golestan Province

Abstract

Background and objectives: Streptomyces is the most important genus in Actinomycetes family. The Streptomycetes are widely used in industry and producing numerous chemical compounds including antibiotics, enzymes and anti-tumor agents. The aim of this study was to isolate soil-borne Streptomyces producing antimicrobial substances from soil of Golestan province of Iran and to survey anti-fungal metabolites produced by this organism.

Material and Methods: In this study, various soil samples were obtained from the depth of 6-10 centimeter in forest areas of Naharkhoran in Gorgan and Kordkuy’s Derazno, Aghala’s deserts and farming lands of Aliabad. The samples were cultured on Actinomycet isolation agar and Starch casein agar and then identified and purified by morphology and biochemistry tests. The activity of isolated Streptomyses against Aspergillus flavus, Aspergillus, Candida albicans and Malasesia fur were studied by Agar Diffusion method. For two isolates having the best anti-fungal effect was performed PCR by using 16RNA primer.

Results: of 120 samples, 24 are Streptomyces (20%). The frequency of Streptomyses is reported in Aghala (10,41.6%), Derzno (8,33.3%), Naharkhoran(4,16.6%) and Aliabad(2,8.3%). Of 24 isolated Sterptomyses, two isolates have strong anti-fungal and six of them have moderate effect. We also see Streptomyses, isolated from desert area, have higher anti-fungal activity.

Conclusion: It is recommended two isolates of Streptomyses be identified and purified.

Key words: Streptomycles, antifungal agents, Anti-Bacterial Agents