Diversity of Actinomycetes for Their Antibiotic Propertiesfrom Soil Samples of Kodagu District - Karnataka (India)

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Background & Objectives: The search for new antibiotics continue to be of extreme importance in research programs around the world because of the increase of resistant pathogens and toxicity of some used antibiotics. Among microorganisms actinomycetes are excellent elaborates producing antibiotics, enzymes and other bioactive compoundsthat has been identified as one of the major group of the soil population. The present study aims at isolation and characterization of actinomycetes for antimicrobial properties from soil samples of Kodagu district of Karnataka as part of Western Ghats, for pharmaceutical applications.

Methods: In this study, soil samples were collected from various localities of Kodagu district of Karnataka (India). Isolation and enumeration of actinomycetes present in the soil samples was performed by serial dilution technique on selective agar medium. Various isolates of actinomycetes strains obtained from different soil samples were tested for antimicrobial activities by perpendicular streak methods. The isolates which have showed more activity were selected for identification based on cultural, morphological, biochemical and physiological characteristics.

Results: In the present study, 158 actinomycetes strains isolated from 15 soil samples of Kodagu district were screened for antimicrobial activities against Gram–positive, Gram-negative bacteria and fungi. Out of 158 isolates, 138 (87%) isolates showed antimicrobial activity. Among these 36 (26%) had antibacterial activities against Gram-positive bacteria, 15(11 %) against Gram-negative bacteria, 87 (63 %) against both Gram-positive and Gram-negative bacteria and 30(22 %) showed antifungal activities. Further, based on preliminary screening, 67 isolates were selected and identified as potential strains of actinomycetes belong to the genus: Micromonospora (26) ; Streptomyces (10); Nocardia (9); Rhodococcus (7); Actinomadura (7); Nocardiopsis (4); Saccharomonospora (2); Psedunocardia (2); Faeinia (1) respectively which belongs to 7 families such as Micromonosporacea, Streptomycetaceae, Nocardiaceae, Micrococcaceae, Thermonosporaceae, Nocardiopsaceae, psedonocardiaceae.

Conclusion: The study indicated that Kodagu district soil had diverse groups of actinomycetes as a source of antibiotics for pharmaceutical interest.

Keywords: Actinomycetes; Antibiotic Properties; Kodagu District