

plant pathologists, quarantine officials and others with interests in plant disease management.

Keywords: Hyphomycetes, Molecular systematics, Pathogens

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Screening of beach sand for bacterial treasures - A preliminary approach

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Marine microorganisms are of great interest as novel and rich sources of biologically active products. The micro-organisms living in both sea water and sand must be able to survive and grow under harsh conditions. Due to these adaptations, the metabolites produced by marine micro-organisms possess unique features and they serve as promising choices for many different biotechnological applications. The aforesaid micro-organisms are referred to as 'microbial treasures' at present.

In this study, preliminary screening for different culturable bacteria present in shoreline sand was carried out and tested for different biological activities. Morphologically different bacterial isolates were identified using the standard morphological and biochemical characterization procedures in microbiology. The results indicated that the majority of the isolates belong to the genus *Bacillus* and the others were the species of *Micrococcus*, *Aerococcus*, *Pseudomonas*, and *Staphylococcus*. The degradation of two dyes, crystal violet and saffranin were tested and the degradation was only observed for crystal violet with two *Bacillus* isolates i.e. SSMA-15 and SSPC-16. Some isolated bacteria accumulated the dyes in their cells. The highest indole acetic acid (IAA) production was observed for the *Bacillus*-SSPC-11. Antagonistic effect against all three selected bacteria, i.e. *S. aureus*, *B. subtilis* and *E. coli* was only shown by the *Pseudomonas*-SSMA-7. Along with the antagonistic effects, it also produced the protease and cellulase enzymes. The bacterial isolate-SSMA-9 belonging to the family *Enterobacteriaceae* exhibited the highest number of positive activities during this study. It included the production of cellulase, laccase, amylase and protease enzymes and the accumulation of the saffranin and crystal violet dyes. The *Bacillus*-SSPC-3 showed positive production of three enzymes; amylase, protease and cellulase. *Staphylococcus*-SSPC-12 has the ability to accumulate the two dyes in addition to the production of the two enzymes amylase and protease. Based on the positive activities and produced components, bacterial isolates SSMA-9, SSMA-7 and SSPC-12 were identified as possible bacterial treasures.

Keywords: Bacterial treasures, Cellulase, Indole acetic acid, Sea sand