IMPACT: International Journal of Research in Applied, Natural and Social Sciences (IMPACT: IJRANSS)
ISSN(P): 2347-4580; ISSN(E): 2321-8851
Vol. 4, Issue 7, Jul 2016, 119-126

ANTIMICROBIAL POTENTIAL OF MARINE ACTINOMYCETES ISOLATED FROM MANGROVE SWAMP AREAS

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ABSTRACT

The present study was undertaken to isolate, determine the inhibitory profile against shrimp test pathogens and identify the actinomycete isolates with prominent activity. A total of 47 Actinomycetes were isolated from 45 samples which included seawater, marine sediment and swab samples of submerged substrates from the Mangrove swamp area located along the coast of Thoothukkudi, Tamil Nadu, India. High number of actinomycetes were isolated from the mangrove sediment samples (26) followed by swabs (12) and seawater (9). 34 (72%) actinomycetes exhibited antagonism to the shrimp test pathogens, *Vibrio alginolytics*, *V. harveyi*, and *V. parahaemolyticus* to varying degrees. 12 isolates exhibited prominent inhibitory activity against the shrimp test pathogens. The isolate A_{10} displayed maximum inhibitory activity, with $\geq$ 20 mm, zone of growth inhibition against all the three shrimp test pathogens. In the color series, high number of antagonistic actinomycetes belonged to gray color series (21) followed by white color series (7) and violet color series (1). The antagonistic actinomycete isolate A_{10} exhibited prominent inhibitory activity against all the shrimp test pathogens and hence was subjected to standard chemotaxonomic and light microscopy investigations and was identified to be belonging to the genus *Streptomyces* spp. The results of the present study indicate that, Mangrove swamp areas are one of the good sources of inhibitory marine actinomycetes. Also, because these isolates displayed antagonism against the shrimp pathogens, they could be used as bio-control agents in shrimp aquaculture systems for preventing the outbreak of shrimp diseases caused by bacterial shrimp pathogens such as *Vibrio alginolyticus*, *V. harveyi* and *V. parahaemolyticus.* Also, novel, anti-microbial compounds can be extracted from these inhibitory marine actinomycetes for controlling shrimp diseases caused by the antibiotic resistant shrimp bacterial pathogens.

KEYWORDS: Mangrove Swamp, Antagonistic Actinomycetes, Cross-Steak Assay, Shrimp Pathogens, Streptomyces