



Isolation, screening and antibiotic profiling of marine Actinomycetes extracts from the coastal of Peninsular Malaysia

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Abstract:In the last few years, Actinomycetes have been extensively studied in several underexplored environments, niche, and extreme habitats in various regions across the globe. Yet, there is no report regarding isolation of actinomycetes from the coastal waters of Malaysia. Given that marine environmental conditions are extremely different from the terrestrial environment, it is logical to opine that marine actinomycetes might be potentials of producing novel bioactive compounds of invaluable medical values. This study aimed at collecting and screening marine sediments from the coastal areas of Johor, Penang and Melaka coastal areas of the peninsular Malaysia. The antibiotic activities of the isolates were tested against *Escherichia coli*, *Staphylococcus aureus*, *Vibrio cholera*, *Vibrio parahaemolyticus*, *Aeromonashydrophillia* and *Pseudomonas aeruginosa*. Fifty samples were collected from these locations and screened for actinomycetes, out of which 11 isolates coded as M1,M1, SDJ-1, SDJ-2,P1, P2,P3, SDJ-8, SDJ-9 and SDJ-10 were obtained on starch-casein agar media, However, out of the 11 isolates, only four isolates showed significant antibacterial activity against both gram-positive and gram-negative bacteria. Further studies were carried out with the most active isolate, SDJ-10. The results showed that Starch casein Broth (SCB), 28°C and pH 7 were the most suitable for SDJ-10. The production of antibiotics began after 24 h reached maximum at 72 h. Ethyl acetate: methanol at the ratio of 6:4 were found to be the best for TLC using silica gel. Seventy two compounds were detected from the ethyl acetate extract of isolate SDJ-10 using GC-MS analysis while 4 peaks were detected in HPLC analysis. Based on the findings of this study, it was concluded that the actinomycete isolated in this study has the potential to be developed as effective antibiotic.

Key words:Antibacterial, bioactive compound, HPLC,GC-MS, Marine actinomycetes.