LS-6-P-6070 Morphological study of antimicrobial actinomycete producing isolates from marine sediments

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Actinomycetes are gram positive bacteria in which many bioactive compounds are generally produced. Over past decade information on the diversity of actinobacteria in marine habitats has grown considerably. In this study, morphological and chemical characteristics of wall chemotype were investigated for a rapid method of basically classification. The location of sediment sampling areas were in Chonburi and Bang-pakong mangrove forests in the east and Nakhon Si-thamarat mangrove in the west of the Gulf of Thailand, including marine shallow water coastal area in the east coast. The sediment samples were pre-treated with dry heat at 100o C for 1 h before dilution and spreading on selective medium plates, incubated at 30o C for 4 weeks. Morphological study was observed both under light microscope and scanning electron microscopy. The results revealed that most active isolates from Chonburi mangrove area were Streptomyces with rectiflexible, spiral and hook spore chain types, while the isolates from Bang-pakong and the west side of the Gulf manifested various different morphological types. The active isolates from marine sediments mostly produced single spore chain type on short or long sporophores or produced in a bundle of Micromonospora and Salinispora, respectively; including a few white spore mass Streptomyces. The electronmicrographs of many isolates could reveal more different morphological detail to consider they were same or different species. Apart of morphological and chemical characteristic studies, some of representative actinomycetes were selected to identified by 16S rRNA gene sequencing. The active isolates from mangrove and marine sediments are moderately diverse in genera, but clearly shown they are morphologically diverse and are rich sources to screen for valuable bioactive compounds.

Acknowledgement: Acknowledgements: The financial support from the NRCT through the Burapha University budget was gratefully acknowledged.
Fig. 1: Single spores are formed on short sporophores of substrate hyphae of Micromonospora from marine sediment on ISP2 medium, 7 days old, 3000X.

Fig. 2: Single spores are formed on short sporophores of substrate hyphae of Micromonospora on ISP2 medium, 7 days old, 3000X.

Fig. 3: Spiral spore chain type, rugose, of Streptomyces on ISP2 medium, 7 days old, 7000X.

Fig. 4: Rectiflexible and hook spore chains are formed on arial mycelia of Streptomyces isolated from mangrove sediment, 7 days old, 2000X.