

CHAPTER V



CONCLUSION

Mangrove soils along the inner gulf of Thailand: Samut prakarn, Samut sakorn, Samut songkram and Phetchaburi provinces; were screened for antimicrobial producing actinomycetes. The soil sample had pH range of 4.49-8.2. From 80 soil samples collected, 50 actinomycetes were isolated.

Primary screening for antimicrobial producing actinomycetes were performed against *Escherichia coli* ATCC 25922, *Pseudomonas aeruginosa* ATCC 27853, *Bacillus subtilis* ATCC 16633, *Staphylococcus aureus* ATCC 6538P, *Micrococcus luteus* ATCC 9341, and *Candida albicans* ATCC 10231. Only 30 actinomycetes isolated revealed antimicrobial properties. An inhibitory distance was range 0.4 to 4.2 cm. Twenty-eight isolates inhibited Gram positive, 6 isolates inhibited Gram negative, and just 5 isolates inhibited yeast.

Morphological, Physiological and biochemical characteristics of the 30 isolates were determined. From the morphological characteristic and antimicrobial activity, 18 isolates were selected as a representative strains for further identify.

The identification based on chemotaxonomic and molecular characteristics. Their cell wall contained meso- and L- diaminopimelic acid. The predominant menaquinones were MK-9(H₈) and MK-9(H₆). Their DNA G+C contents were in the range of 69-73 mol%.

Phylogenetic tree constructed from their 16S rDNA sequence revealed their position in the clade of the genus *Streptomyces*. The percentage of 16S rDNA sequence similarity indicated that 7 representative strains examined were new species. The 2 *Streptomyces* sp. nov. and 5 *Streptomyces* sp. produced interesting antimicrobial activity culture filtrates were extracted by ethyl acetate, and subjected to agar disc diffusion assay and nuclear magnetic resonance analysis. They exhibited the antimicrobial activity clear zone ranged from 0.8-1.7 cm in diameter. NMR spectra of culture filtrate of strain C10-6 showed unique peak which was not generally formed in

antibiotics produced by *Streptomyces*. Therefore, chemical structure of antibiotic produced by strain C10-6 was elucidated by column chromatography and NMR.