

Ritthirong Prommas 2007: Antimicrobial Substances from Marine Sponges and Associated Bacteria. Master of Science (Marine Science), Major Field: Marine Science, Department of Marine Science. Thesis Advisor: Assistant Professor Puntip Wisespongpan, M.S. 128 pages.

Methanol-toluene extracts from 17 out of 28 species (60.71%) of marine sponges had antimicrobial activities. The extract of marine blue sponge *Neopetrosia* sp. showed potent antimicrobial activity as broad spectrum against 11 pathogens and unique activity against black tiger shrimp pathogens, *Vibrio cholerae* and *Vibrio fluvialis* and plant pathogen, *Rolstonia solanacearum*.

Seventy-six percent of fractions from the crude extracts of *Neopetrosia* sp. which were separated by column chromatography had antimicrobial activities. The fractions, NEO\_CC\_21 and NEO\_CC\_22 showed broad spectrum activity and the unique activity the same as the crude extracts. The other fractions, NEO\_CC\_07 and NEO\_CC\_08 had potent antifungal activity and were further purified by HPLC. The structure elucidation by <sup>1</sup>H-NMR suggested that the bioactive compound consisted of isoquinoline quinone. However, these compounds should be more purified and determined by other spectroscopic techniques.

Eight isolates (53.33%) of marine bacteria associated with *Neopetrosia* sp. also had antimicrobial activity against human, black tiger shrimp and plant pathogens. The antimicrobial bacteria mostly were rod, gram negative, endospore and enzyme oxidase produced and halophilic strains.

This study has indicated that *Neopetrosia* sp. and the associated marine bacteria are the promising sources of antimicrobial substances. The antimicrobial compounds could be developed for curing infectious diseases against human and agricultural pathogens in Thailand.

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