

## Isolation of Marine Actinomycetes Producing Bioactive Compounds and Effect of Sea Water on the Production

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### Summary

Natural products have a major commercial impact in the fields of medicine and agriculture, where they continually give rise to novel applications and new modes of action and targets. A number of terrestrial actinomycetes, especially those belonging to the genus *Streptomyces*, are being extensively used for commercial production of different medically important compounds. As the search for producers of novel compounds continues, it becomes apparent that many terrestrial *Streptomyces* species isolated from different environments produce the same compounds. Thus, the ratio of finding genuinely new biologically active molecules is greatly declined. Marine actinomycetes, especially which are being in Thailand, a country of great biological diversity, are one of promising sources in search for new drugs, and their potential for producing biologically active compounds is poorly examined. In this work, we have isolated marine actinomycetes in the sea water sediments and the sponge of the Gulf of Thailand, evaluated their metabolites as bioactive compounds, and investigated the potential effect of sea water on the production.

Thirty-five actinomycetes-like colonies have been isolated from the samples derived from the Gulf of Thailand, and regarded as marine actinomycetes. In order to evaluate the potential activity for production of bioactive compounds, the strains were grown on solid medium and in liquid medium, and bioassays with the agar pieces and the culture supernatant were performed by using 4 indicator strains. The results of bioassays suggested that the marine actinomycetes isolated in this study are a suitable microbial group for isolation of new bioactive compounds. Subsequently, to discover structurally unique secondary metabolites, we performed a HPLC/UV-based chemical screening using crude extracts from liquid cultivation. The result of these analyses demonstrated that some of the isolated strains produce the polyketide compound resistomycin and another strain has an ability to produce rakicidin-like compounds, which may have anti-tumor activity. The observation that the presence of sea water stimulated the production of bioactive compounds could lead to an idea that exogenous addition of sea water into the medium is one of methods for finding new clinically useful compounds.