

Secondary metabolites produced by Thai fungi in the genera *Aspergillus* and *Penicillium*: Chemical diversity and bioactivity

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ABSTRACT:

Fungi are an important source of novel bioactive secondary metabolites that can be excellent new starting points for the development of novel pharmaceuticals. Our research group at Prince of Songkla University has focused on the investigation of bioactive secondary metabolites from fungi isolated from a wide variety of substrates including *Garcinia* and mangrove plants, seagrasses, rubber tree, marine organisms and soil. Among them, marine- and soil-derived fungi have gained prominence as a source of bioactive compounds with extraordinary chemical and biological diversity. Chemical investigation of 12 *Aspergillus* and 10 *Penicillium* strains of these types of fungi has resulted in the isolation of more than 300 secondary metabolites of which 36% are new natural products with diverse structures, for example, anthraquinones, γ -butenolides, cytochalasins, depsidones, lovastatins, pyrrolidines, terphenyllins, and xanthenes. Some of them displayed interesting antibacterial, anticancer, HMG-CoA reductase inhibitory, cystic fibrosis transmembrane conductance regulator (CFTR) inhibitory and transmembrane protein 16A (TMEM16A) inhibitory activities. The mechanism of action of potential natural compounds was investigated. This presentation will focus on structure diversity and bioactivities of secondary metabolites from marine- and soil-derived fungi in the genera *Aspergillus* and *Penicillium*.

KEYWORDS:

Marine-derived fungi; soil-derived fungi; *Aspergillus* sp.; *Penicillium* sp.; structure diversity; bioactivity.