

The Investigation of Antimicrobial and Siderophore-like Natural Products of Marine-derived Fungi, *Trichoderma* spp. by LC-MS/MS and Molecular Networking Analysis

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Marine covers nearly three-quarters of the earth surface. The unique extreme environments in ocean, such as deep-sea volcano, estuaries, intertidal zones, and other special circumstances, harbor the abundant biodiversity of marine organisms, which generate a series of completely different secondary metabolism from those of terrestrial organisms. In addition, to survive in the trace metals-insufficient seawater environments, marine microorganisms develop a series of special organic-ligand systems to help marine microorganisms harvest iron and zinc, and other trace metals, some of which were called as siderophores (iron-chelating). Besides, these organic ligands are species-specific to influence the growth of other microorganisms by seizing trace metal sources and are regarded as anti-microbial components. To search novel anti-microbial secondary metabolites from marine microorganisms, we found two marine fungi, *Trichoderma reesi* (MR13-TR01) and *T. atroviride* (MR13-TA01), isolated from a sponge collected in Wan-Li Tong, Pingtung County, showed clearly iron-chelating effect and good inhibitory effects against nine indicator bacteria.

By LC-PDA bioassay-guided fractionation and HPLC isolation and LC-MS/MS molecular networking analysis, eight peptaibols were isolated from the bioactive fraction of the ethyl acetate extract of *T. reesi* MR13-TR1 and MR13-TA01, both of which exhibit good inhibitory activity toward *Acinetobacter baumannii*. In the solid-phase anti-microbial assay, some of this type of compounds exhibited good inhibitory effect and also showed siderophore-like effect by the iron-chelating test. More detailed mechanism of iron-chelating and anti-microbial actions of these organic ligands will be further under the investigation.