

The Investigation on siderophore like Anti-Microbial Organic Compounds from Marine-Derived Fungus *Aspergillus terreus*

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Marine microbes are regarded as one of the worthiest treasures for novel chemical Scaffolds. To search for novel anti-microbial secondary metabolites from marine environment, we isolated a marine-derived fungus *Aspergillus terreus* (MB14-HBr) from the sponge *Haliclona* sp. collected from Dongsha Atoll, Taiwan in May 2014. The obtained fungus was further cultured in laboratory and fungal metabolites were extracted by ethyl acetate (EtOAc). Preliminary anti-microbial activity assay indicated that EtOAc extract of MB14-HBr could inhibit one bacterial and one fungal pathogen, *Acinetobacter baumannii* and *Candida albicans*, respectively. Besides interestingly, we also discover that the crude EtOAc extract of this fungus exhibited siderophore-like (iron-chelating) effects by Chrome-azurol S (CAS) assay. Due to inherent iron clutching properties of siderophores, they have impending applications in cancer chemotherapy. During the onset of progression of normal cells to clump of cancer cells (tumors), the nutritional requirement enhances to a great extent. Due to rapid proliferation of cancer cells, the expression of iron chelating proteins called ferritin increases in order to capture surrounding iron. The isolated siderophores can be exploited for competing ferritin to capture iron. In case of iron depletion, DNA synthesis of cancer cells gets hampered, resulting in cancer cell death. Thus the isolated compounds can be used in cancer chemotherapy¹. Furthermore, the EtOAc extract was subjected to Sephadex LH-20 column chromatography and reversed phase high performance liquid chromatography. A total of twenty-five compounds have been isolated from this fungal extract, they are different types like butyrolactone, asterric acid, dihydrogeodin, triterpenoid types moreover, few are interesting compounds those showed new patterns on proton spectra and presumably are new compounds, recently we have solve one compound and the structure is terrelumamides type. According to just published literature data of terrelumamides types of compounds, exhibited pharmacological activity by improving insulin sensitivity.² Herein, we will focus on elucidating chemical structure of new compounds by 1D and 2D NMR, and mass spectrometry, as well evaluating antimicrobial activities of all fourteen compounds.

Key words: *Aspergillus terreus*, Anti-microbial activity, *Acinetobacter baumannii*, *Candida albicans*, Iron chelating effects