

琉球大学学術リポジトリ

沖縄産海洋生物の新規二次代謝産物の探索

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論 文 要 旨

論 文 題 目

Search for New Secondary Metabolites from Okinawan Marine Organisms

On a search to discover new bioactive secondary metabolites, we screened extracts of marine sessile organisms which we have not examined before. From a sponge *Sigmosceptrella* sp. collected at Cape Hedo, two new norsesterterpenoids named trunculins X (**1**) and Y (**2**) were isolated. With spectral data analyses, their planar structures were elucidated to be stereoisomers of trunculins, reported from Australian sponges. The absolute configuration of trunculin X (**1**) was determined by X-ray crystallography of its diol derivative, while that of trunculin Y (**2**) was solved by applying chiral derivatizing methods to derivatives and by observing NOEs on an oxidized derivative. Compounds **1** and **2** showed cytotoxicity at IC₅₀ 0.32, 20 and 3.2 μM, 0.39, 17 and 0.57 μM against pancreatic carcinoma PANC-1, colon cancer HCT116 and a rat bladder epithelial NBT-T2 cells, respectively.

On a collaborative project to find new antiviral compounds, an extract prepared from the black sponge *Dercitus (Halinastra) japonensis*, collected at Yonaguni Island, showed inhibition against human immunodeficiency virus (HIV). After bioassay-guided separation, a new imidazole sulfate **18** and three known compounds **19-21** were characterized. The structure of compound **18** was elucidated by spectroscopic methods. One of the known compounds **19** showed weak anti-HIV activity at IC₅₀ 109 μM.

On our interest for genetic and chemical biodiversity of the nudibranchs of the genus *Phyllidiidae*, we identified all the specimens and examined marker sesquiterpenoids in their extracts. Two new isocyanosesquiterpenoids **23** and **24** were isolated from a specimen of *Phyllidiella* sp.-1 collected at Cape Hedo. The planar structures and relative configurations of **23** and **24** were elucidated by spectroscopic analyses and by comparison of the data with known compounds. By using ¹H NMR spectral data, the extracts were analyzed statistically. In addition to chemical diversity, our collaborator analyzed genetic diversity of the nudibranchs with COI. As results, the nudibranchs can be grouped into many clades with characteristic combination of the sesquiterpenoids.

Totally, structures of five new bioactive compounds were determined and a number of known compounds were identified during the study.

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