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Dictyoneolone, a B/C ring juncture-defused steroid from a *Dictyonella* sp. sponge

Jung-Kyun Woo[a], Jung-Ho Yun[a], Seyeon Ahn[a], Chung J. Sim[b], Minsoo Noh[a], Dong-Chan Oh[a], Ki-Bong Oh[c,*], Jongheon Shin[a, *]

[a] *Natural Products Research Institute, College of Pharmacy, Seoul National University,San 56-1, Sillim, Gwanak, Seoul 151-742, Korea*
[b] *Department of Biological Science, College of Life Science and Nano Technology, Hannam University, 461-6 Jeonmin, Yuseong, Daejeon 305-811, Korea*
[c] *Department of Agricultural Biotechnology, College of Agriculture and Life Science, Seoul National University, San 56-1, Sillim, Gwanak, Seoul 151-921, Korea*

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ABSTRACT

Dictyoneolone (**1**), a new secosteroid was isolated from a *Dictyonella* sp. sponge collected from Gageo-do, Korea. Based upon the results of combined spectroscopic analyses, the structure of this compound was determined to possess a highly unusual B/C ring juncture-defused moiety. The configurations of 1 were determined by a combination of proton-proton couplings and NOESY analyses. Dictyoneolone exhibited weak cytotoxicity against the K562 and A549 cancer cell lines.

Introduction

Marine sponges produce a wide variety of structurally unique and biologically active metabolites.[1] Among the novel sponge-derived compounds, steroids of unusual carbon skeletons and bioactivities are frequently encountered from diverse animals.[2] Thus, even in the early period of marine natural products research, sponges were highly regarded as the most prolific sources of novel steroids among marine invertebrates and the whole animal kingdom.[3-7] During the search of bioactive compounds from marine sponges, we encountered the red-colored clustering *Dictyonella* sp. sponge at Gageo-do, Korea, whose crude extract exhibited moderate cytotoxicity against the K562 cell-line (IC_{50} 272 μg/mL). Activity-guided fractionation of the extract, followed by vacuum flash chromatography and HPLC yielded dictyoneolone (**1**), a novel secosteroid. Here, we report the structure determination of this compound possessing a highly unusual 10-membered ring moiety bearing an 8,9-diketo group. Dictyoneolone exhibited weak cytotoxicity against K562 and A549 cell-lines.

Results and discussion

Isolation of dictyoneolone

The specimens of *Dictyonella* sp. (Order Halichondriidae, Family Dictyonellidae) was collected from the offshore of Gageo-do, South Sea, Korea. Dictyoneolone (**1**), a white amorphous solid, was isolated by bioassay-guided solvent partitioning of crude extract followed by C_{18} vacuum flash chromatography and repeated HPLC.

∗ Corresponding author. Tel.: +82-2-880-2483; fax: +82-2-762-8322; e-mail: shinj@snu.ac.kr (J. Shin)

∗ Corresponding author. Tel.: +82-2-880-4646; fax: +82-2-873-3112; e-mail: ohkibong@snu.ac.kr (K.-B. Oh)