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STRONG ETHANOL SOLVATE OF DISCORHABDIN A ISOLATED FROM THE FAR-EAST SPONGE *Latruculia oparinae*

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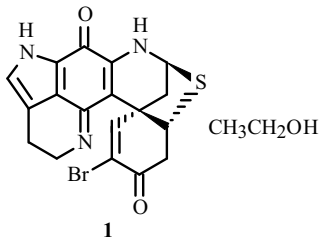
Sponges of the genus *Latrunculia* are rich sources of biologically active compounds. Polycyclic alkaloids such as discorhabdins [1–11] and macrolides [12, 13], peptides [14–16], and norsesterterpene peroxides [17–21] have been found previously in them. Until now, the chemistry of Far-East sponges of the genus *Latrunculia* has not been studied. We isolated for the first time compound **1** from the new sponge species *Latrunculia oparinae* (Demospongiae, Poecilosclerida, Latrunculiidae) that was collected during an expedition of the SRS Academic Oparin near the shores of Kuril Islands (Ushishir Island, Rikord Straits, 49°22.10' N, 154°09.5' E).



1

L. oparinae (dry weight 300 g) was extracted three times with EtOH. The extract was concentrated in vacuo. The solid was partitioned between EtOH (90%) and hexane. The aqueous EtOH layer was diluted with water (to 70% EtOH) and extracted with $CHCl_3$. The resulting $CHCl_3$ extract was concentrated in vacuo to a moist oily residue and chromatographed over a column of Al_2O_3 with elution by $CHCl_3$:NH_3 (100:0.1) and $CHCl_3$:EtOH:NH_3 (140:1:0.1), then three times over a column of Sephadex LH-20 with elution by $CHCl_3$:EtOH (1:1), and then over a column of silica gel with elution by $CHCl_3$:EtOH (14:1) to afford **1** (100 mg, 0.03% of dry sponge weight).

The molecular formula of **1** was $C_{18}H_{14}{}^{79}BrN_3O_2S$ and was confirmed by the HR-ESI mass spectrum: found, *m*/*z* 416.0110; calcd, *m*/*z* 416.0063. A comparison of the PMR, UV (EtOH), and IR (KBr) spectra with the literature showed that **1** had a structure including the same relative configuration of three asymmetric centers as discorhabdin A from the New Zealand sponge *Latrunculia* sp. [3] or prianosin A from the Okinawan sponge *Prianos melanos* [22], which had the same structure. However, **1** isolated by us from *L. oparinae* had a specific optical rotation index that was opposite in sign to that in the literature. Thus, for **1**, $[\alpha]_D$ –449° (*c* 0.01, MeOH); for discorhabdin A, $[\alpha]_D$ +440° (*c* 0.05, MeOH) [3], for prianosin A, $[\alpha]_D$ +248° (*c* 0.19, MeOH) [22]. Furthermore, **1** was obtained by us as reddish crystals whereas discorhabdin A and prianosin A that were isolated previously were reported to be green [3, 22]. We hypothesized that these differences were related to the fact that the crystals of **1** that we obtained from EtOH extracts, in contrast with the related compounds, which were obtained from MeOH solutions. An x-ray structure analysis of **1** [23] showed that discorhabdin A was solvated by EtOH, a molecule of which was placed into the unique cavity formed by the *N*-containing and spirocycles of alkaloid. Obviously, the solvate formed in this manner was rather strong and had a color and optical rotation angle different from the free compound. This hypothesis was confirmed experimentally. We found that storing **1** in MeOH solution at room temperature for 3 d destroyed the strong solvate. The compound acquired an optical rotation close to that reported for discorhabdin A and prianosin A.

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Compound **1**, like its unsolvated form [3, 22], was a strong cytotoxin against tumor cells and inhibited murine Erlich carcinoma cells (ED_{50} = 0.055 μg/mL).

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