



Didemnaketals F and G, New Bioactive Spiroketal from a Red Sea Ascidian *Didemnum* Species

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Abstract:

In continuation of our ongoing efforts to identify bioactive compounds from Red Sea marine organisms, a new collection of the ascidian *Didemnum* species was investigated. Chromatographic fractionation and HPLC purification of the CH₂Cl₂ fraction of an organic extract of the ascidian resulted in the identification of two new spiroketals, didemnaketals F (1) and G (2). The structure determination of the compounds was completed by extensive study of 1D (¹H, ¹³C, and DEPT) and 2D (COSY, HSQC, and HMBC) NMR experiments in addition to high-resolution mass spectral data. Didemnaketal F (1) and G (2) differ from the previously reported compounds of this class by the lack the terminal methyl ester at C-1 and the methyl functionality at C-2. Instead, 1 and 2 possess a methyl ketone moiety instead of the terminal ester. Furthermore, didemnaketal F possesses a disubstituted double bond between C-2 and C-3, while the double bond was replaced by a secondary alcohol at C-3 in didemnaketal G. In addition, they possess the unique spiroketal/hemiketal functionality which was previously reported in didemnaketal E. Didemnaketals F (1) and G (2) displayed moderate activity against HeLa cells with of IC₅₀s of 49.9 and 14.0 μM, respectively. In addition, didemnaketal F (1) displayed potent antimicrobial activity against *E. coli* and *C. albicans*. These findings provide further insight into the biosynthetic capabilities of this ascidian and the chemical diversity as well as the biological activity of this class of compounds.

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