

Anti-adipogenic pregnane steroid from a hydractinia-associated fungus, *Cladosporium sphaerospermum* sp. SW67.

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Abstract

A pregnane steroid, 3 α -hydroxy-pregn-7-ene-6,20-dione (**1**), was isolated from a Hydractinia-associated *Cladosporium sphaerospermum* sp. SW67 by repetitive column chromatographic separation and highperformance liquid chromatography (HPLC) purification. The planar structure of **1** was elucidated from the analysis of the spectroscopic data (1D and 2D NMR spectra) and LC-MS data. The absolute configuration of **1** was determined by interpretation of ROESY spectrum of **1**, together with the comparison of reported spectroscopic values in previous studies. To the best of our knowledge, this is the first report of the identification of the pregnane scaffold from *C. sphaerospermum*, a natural source. Compound **1** was evaluated

for its effects on lipid metabolism and adipogenesis during adipocyte maturation and showed that compound **1** substantially inhibited lipid accumulation compared to the control. Consistently, the expression of the adipocyte marker gene (Adipsin) was reduced upon incubation with **1**. Further, we evaluated the effects of **1** on lipid metabolism by measuring the transcription of lipolytic and lipogenic genes. The expression of the lipolytic gene ATGL was significantly elevated upon exposure to **1** during adipogenesis, whereas the expression of lipogenic genes FASN and SREBP1 was significantly reduced upon treatment with **1**. Thus, our findings provide experimental evidence that the steroid derived from Hydractinia-associated *C. sphaerospermum* sp. SW67 is a potential therapeutic agent for obesity.

Involved units

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