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Phytochemical communication

A new steroid from *Selaginella pulvinata*

Xing Zheng [a,c,*], Jiang Du [b], Yunlong Xu [c], Bingyang Zhu [a], Duanfang Liao [a]

[a] *Institute of Pharmacy and Pharmacology, Nanhua University, Hengyang 421001, PR China*
[b] *Department of Applied Chemistry, Yunnan University, Kunming 650091, PR China*
[c] *State Key Laboratory of Phytochemistry and Plant Resources in West China, Kunming Institute of Botany, Chinese Academy of Sciences, Kunming 650204, PR China*

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Abstract

A new steroid, 3β, 16α-dihydroxy-(5α)-cholestan-21-oic acid , was isolated from the aerial parts of *Selaginella pulvinata*. Its structure was elucidated on the basis of spectral analysis.

Keywords: Selaginella pulvinata; Steroids; Spectral analysis

1. Plant

Selaginella pulvinata, collected in Kunming, Yunnan Province of China, was identified by Prof. S. K. Wu, a Botanist of Kunming Institute of Botany. A voucher specimen was deposited in the Herbarium of Kunming Institute of Botany, Chinese Academy of Sciences.

2. Uses in traditional medicine

S. pulvinata has been used to treat tumor, diabetes, stomachache and asthma [1].

3. Previously isolated constituents

Sterols and flavonoids [2,3].

4. New isolated constituent

3β, 16α-Dihydroxy-(5α)-cholestan-21-oic acid (**1**, Fig. 1, yield: 0.0003%).

* Corresponding author. Institute of Pharmacy and Pharmacology, Nanhua University, Hengyang 421001, PR China.
E-mail address: zhengxing5018@yahoo.com (X. Zheng).

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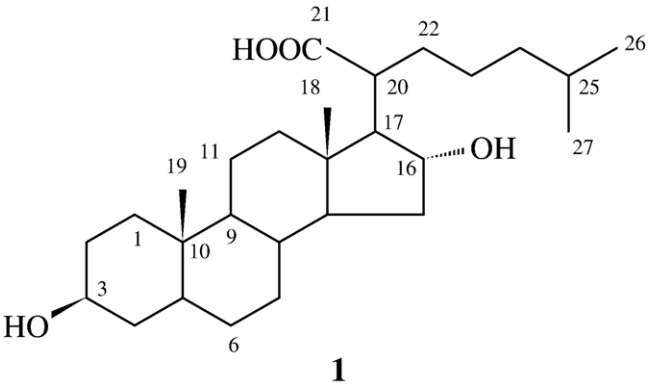

Fig. 1.

White powder, mp 213–215 °C; EI-MS *m/z*: 434 $[M]^+$, 416 $[M–H_2O]^+$, 388 $[M–COOH–H]^+$, 291 $[M–C_8H_{15}O_2$ (side chain)$]^+$; HRMS *m/z*: 434.3403. Calculated for $C_{27}H_{46}O_4$: 434.3396. ^{1}H NMR (300 M Hz, C_5D_5N): δ 4.41 (16β-H, *m*), 3.80 (3α-H, *m*), 1.01 (3H, *s*, 19 Me), 0.79 (3H, *d*, *J* 6.6 Hz, 27 Me), 0.77 (3H, *s*, 18 Me), 0.76 (3H, *d*, J 6.6 Hz, 26 Me); ^{13}C NMR (75 M Hz, C_5D_5N): δ 37.5 (C-1), 32.5 (C-2), 70.7 (C-3), 38.9 (C-4), 45.3 (C-5), 29.2 (C-6), 32.9 (C-7), 35.4 (C-8), 54.8 (C-9), 35.9 (C-10), 21.3 (11), 39.5 (C-12), 44.3 (C-13), 53.7 (C-14), 37.8 (C-15), 76.1 (C-16), 63.2 (C-17), 12.6 (C-18), 14.2 (C-19), 47.9 (C-20), 178.8 (C-21), 32.5 (C-22), 26.3 (C-23), 39.3 (C-24), 28.5 (C-25), 22.6 (C-26), 22.9 (C-27).

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References

[1] Jiangsu Institute of Botany. Outline of New China Herbal. Shanghai Science and Technology Press; 1991. p. 5376.
[2] Zheng X, Liao DF, Zhu BY, Tuo QH, Xu YL. Zhongcaoyao 2001;32:17.
[3] Tan GS, Chen LZ, Xu KP, Zheng QC, Xu Z, Huang ZH, et al. Huaxue 2004;24:1082.