



Phytochemical communication

A new cardenolide from the roots of *Streptocaulon tomentosum*

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Abstract

A new cardenolide, (17 α)-*H*-periplogenin-3-*O*- β -D-glucopyranosyl-(1–4)-2-*O*-acetyl-3-*O*-methyl- β -fucopyranoside (**1**), was isolated from the roots of *Streptocaulon tomentosum*.

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Keywords: *Streptocaulon tomentosum*; Cardenolides

1. Plant

Streptocaulon tomentosum Wight and Arn. (Asclepiadaceae), roots collected in May 2002 at Mawlamyine, District Mawlamyine, Myanmar by Dr. Daw Hla Ngwe. The species was identified by Prof. Dr. Aung Aung Min, Department of Botany, University of Yangon. A voucher specimen of the clamberer (No. Y.H.V. 1004) is deposited in University of Yangon.

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2. Use in traditional medicine

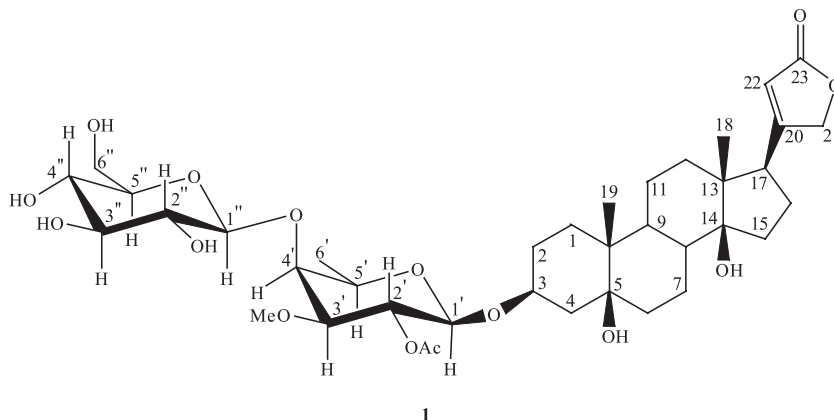
No reports for *S. tomentosum*. Roots of *S. juvenas* (Lour.) Merr., which is native in Indochina, are used in traditional medicine as a tonic against anemia, chronic malaria, rheumatism, menstrual disorders, neurasthenia, and dyspepsia [1]. Furthermore, an antiproliferative activity of cardenolides isolated from *S. juvenas* is demonstrated [1]. Cardenolides were also reported to have cytotoxicity against tumor cells [2].

3. Previously isolated classes of constituents

No reports.

4. New isolated constituents

From air-dried roots (1000 g): α -amyrin acetate (1.5 g), β -amyrin acetate (1 mg), lupeol acetate (40 mg), cycloartenol (1 g), digitoxigenin (17 mg), (17 α)-*H*-periplogenin (10 mg) [3], (17 β)-*H*-periplogenin (1.5 mg) [4] and 4 mg of **1**.



(17 α)-*H*-periplogenin-3-*O*- β -glucopyranosyl-(1-4)-2-*O*-acetyl-3-*O*-methyl- β -fucopyranoside (**1**). White powder; mp 191–193 °C; CD (MeOH): 238 nm; IR bands (KBr): 3420, 1780, 1740, 1635 cm⁻¹; HRESIMS *m/z* 777.36606 [M+Na]⁺, (calcd. for C₃₈H₅₈O₁₅Na 777.36679); ¹H-NMR (500 MHz, CD₃OD): δ 0.875 (3H, *s*, H-18), 0.917 (3H, *s*, H-19), 1.304 (3H, *d*, *J* 6.4 Hz, H-6'), 2.834 (1H, *m*, H-17), 2.088 (3H, *s*, 2'-OCOCH₃), 3.431 (3H, *s*, 3'-OCH₃), 3.474 (1H, *dd*, *J* 10.1, 3.0 Hz, H-3'), 3.640 (1H, *dd*, *J* 11.6, 6.1 Hz, H-6''b), 3.880 (1H, *dd*, *J* 11.6, 1.4 Hz, H-6''a), 4.124 (1H, *brs*, H-3), 4.234 (1H, *bd*, *J* 3.0 Hz, H-4'), 4.530 (1H, *d*, *J* 8.0 Hz, H-1'), 4.542 (1H, *d*, *J* 7.7 Hz, H-1''), 4.910 (1H, *dd*, *J* 18.8, 1.7 Hz, H-21b), 5.024 (1H, *dd*, *J* 18.8, 1.7 Hz, H-21a), 5.095 (1H, *dd*, *J* 10.1, 8.0 Hz, H-2'), 5.894 (1H, *brs*, H-22); ¹H-NMR (500 MHz, C₅D₅N): δ : 1.001 (3H, *s*, H-19), 1.029 (3H, *s*, H-18), 1.557 (3H, *d*, *J* 6.4 Hz, H-6'), 2.818 (1H, *m*, H-17), 2.225 (3H, *s*,

2' , -OCOCH₃), 3.457 (3H, *s*, 3' -OCH₃), 3.608 (1H, *dd*, *J* 10.2, 3.0 Hz, H-3'), 3.738 (1H, *m*, H-5'), 4.190 (1H, *dd*, *J* 9.4, 8.8 Hz, H-4''), 4.248 (1H, *dd*, *J* 8.8, 8.8 Hz, H-3''), 4.448 (1H, *bd*, *J* 3.0 Hz, H-4'), 4.605 (1H, *bd*, *J* 11.5 Hz, H-6'' a), 4.841 (1H, *d*, *J* 8.0 Hz, H-1'), 5.149 (1H, *d*, *J* 7.7 Hz, H-1''), 5.342 (1H, *dd*, *J* 18.4, 1.7 Hz, H-21a), 5.828 (1H, *dd*, *J* 10.2, 8.0 Hz, H-2'), 6.161 (1H, *brs*, H-22); ¹³C-NMR (125 MHz, CD₃OD): δ 16.3 (C-18), 17.2 (C-19), 17.2 (C-6'), 21.1 (2' -OCOCH₃), 22.6 (C-11), 24.8 (C-7), 26.5 (C-1), 26.9 (C-15), 27.9 (C-16), 33.3 (C-2), 35.6 (C-6), 36.1 (C-4), 40.1 (C-9), 40.9 (C-12), 41.6 (C-8), 41.8 (C-10), 50.9 (C-13), 51.9 (C-17), 58.5 (3' -OCH₃), 63.0 (C-6''), 71.8 (C-5'), 71.8 (C-4''), 72.7 (C-2'), 75.1 (C-5), 75.2 (C-4'), 75.3 (C-21), 75.9 (C-2''), 77.8 (C-3''), 78.2 (C-5''), 78.7 (C-3), 83.5 (C-3'), 86.3 (C-14), 102.1 (C-1'), 104.6 (C-1''), 117.9 (C-22), 172.2 (2' -OCOCH₃), 177.2 (C-23), 178.3 (C-20).

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