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New Triterpene Glycoside from *Thalictrum smithii*

Shi Chun YU*, Qing Li WU, Li Wei WANG and Pei Gen XIAO

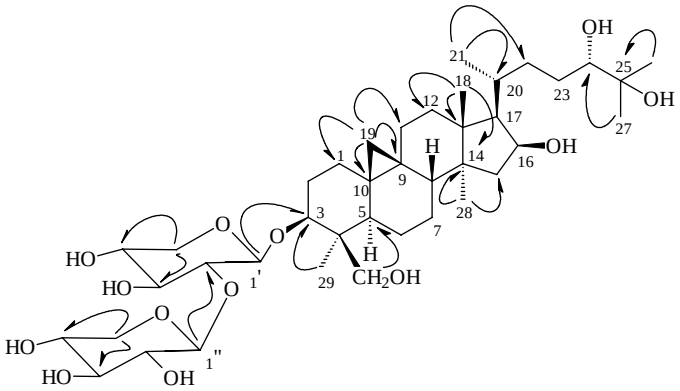
Institute of Medicinal Plant Development, Chinese Academy of Medical Sciences
and Peking Union Medical College, Beijing 100094

Abstract: A new triterpene glycoside, 24S-cycloartane-3β, 16β, 24, 25, 30-pentaol 3-O-(2-O-β-D-xylosyl)-β-D-xyloside was isolated from *Thalictrum smithii*. Its structure was determined by spectroscopic and chemical methods.

Keywords: *Thalictrum*, *Thalictrum smithii*, triterpene glycoside, 24S-cycloartane-3β, 16β, 24, 25, 30-pentaol 3-O-(2-O-β-D-xylosyl)-β-D-xyloside .

Compound **1** was isolated from *Thalictrum smithii.*, white crystal, mp. 211-213℃, gave a molecular formula of $C_{40}H_{68}O_{13}$ based on its negative FAB-MS (*m/z* 755 M^+-1, 623 M^+-xyl-1, 491 M^+ -1 of aglycone), ^{1}H NMR and ^{13}C NMR spectra.data were listed in Table 1.

Figure 1. Compound 1 and its HMBC spectral interaction



In the ^{1}H NMR (500 MHz, DMSO-d_6) of **1**, the proton doublets interacting with one another in the manner of an AB system are observed in the upfield at δ 0.27 and 0.45 (each 1 H, d, J=2.9 Hz, H-19), indicating the presence of a cyclopropane ring. There are also six methyl signals at δ 0.80 (s, H-28), 0.84 (d, J=6.5 Hz, H-21), 0.99, 1.03 (s, H-26, 27), 1.03 (s, H-29) and 1.08 (s, H-18), while there is no signal of olefinic proton. It can therefore be assumed that the aglycone of this compound is a derivative of the lanostane,

which is closely similar to cyclofoetigenin B, 24S-cycloartane-3β, 16β, 24, 25, 30-pentaol, comparing with the NMR spectral data[1, 2].

Table 1. ^{1}H and ^{13}C NMR spectral data of 1 (δ in ppm, J in Hz)

No	^{13}C	DEPT	^{1}H	No	^{13}C	DEPT	^{1}H
1	31.3	CH_2	1.16, 1.40	**21**	17.6	CH_3	0.84 (d, 6.5)
2	28.9	CH_2	1.63, 1.89	**22**	32.3	CH_2	1.11, 1.66
3	88.6	CH	3.25	**23**	27.1	CH_2	1.28, 1.42
4	43.9	C		**24**	76.6	CH	3.16
5	47.4	CH	1.28	**25**	71.5	C	
6	21.3	CH_2	0.91, 1.55	**26**	25.9	CH_3	1.03
7	26.1	CH_2	0.99, 1.23	**27**	24.8	CH_3	0.99
8	47.8	CH	1.43	**28**	19.8	CH_3	0.80
9	20.2	C		**29**	19.7	CH_3	1.03
10	24.9	C		**30**	65.3	CH_2	3.34, 3.80
11	25.5	CH_2	1.27, 1.91	**1'**	103.6	CH	4.28 (d, 7.1)
12	32.4	CH_2	1.52, 1.57	**2'**	79.7	CH	3.28
13	44.7	C		**3'**	75.8	CH	3.33
14	46.0	C		**4'**	69.2	CH	3.26
15	48.1	CH_2	1.23, 1.90	**5'**	65.1	CH_2	3.05, 3.68
16	70.5	CH	4.23	**1"**	103.8	CH	4.42 (d, 7.6)
17	56.2	CH	1.44	**2"**	74.1	CH	2.98
18	17.6	CH_3	1.08	**3"**	75.8	CH	3.04
19	29.2	CH_2	0.27, 0.45 (d, 3.9)	**4"**	69.2	CH	3.25
20	28.3	CH	1.78	**5"**	65.6	CH_2	2.97, 3.62

The acidic hydrolysis of **1** yielded D-xylose by co-TLC with authentic samples. Extensive analysis of the 1D and 2D NMR spectra, including DEPT, ^{13}C-^{1}H COSY and HMBC (**Figure 1**), gave a conclusive sequence for the 3-O-diglycoside moiety to be 2-O-β-D-xylosyl β-D-xyloside. Furthermore, anomeric proton of one β-xylose at δ 4.28 (1H, d, J=7.1 Hz, H-1') exhibited a correlation with the C-3 (88.6, glycosylation shift ca. +8.0 ppm), and the anomeric signal of the other sugar, β-xylose, at δ 4.42 (1H, d, J=7.6 Hz, H-1") showed correlation with the C-2' (79.7, glycosylation shift ca. +5.5 ppm). Further comparison of its ^{13}C NMR spectral data with those of cyclofoetigenin B fully confirmed the structure of this compound to be 24S-cycloartane-3β, 16β, 24, 25, 30-pentaol 3-O-(2-O-β-D-xylosyl)-β-D-xyloside (**Table 1**) [1, 2].

References

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