

Two New Styryllactones from *Goniothalamus cheliensis*

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Abstract: Two new styryllactones, iso-goniopyprone and 8-acetyl-9-deoxygoniopyprone, were isolated from the roots of *Goniothalamus cheliensis*. Their structure were elucidated on the basis of spectroscopic and chemical evidences.

Keywords: *Goniothalamus cheliensis*, iso-goniopyprone, 8-acetyl-9-deoxygoniopyprone.

Goniothalamus cheliensis Hu belongs to the genus *Goniothalamus* of the family Annonaceae, distributed in Yunnan Province, Southwest of China¹. Styryllactones, alkaloids, flavonoids, and goniolactones were isolated from the title plant in our previous phytochemical investigation¹⁻². As reported as a sequel, we describe elucidation of the structures of two new styryllactone, iso-goniopyprone (**1**) and 8-acetyl-9-deoxygoniopyprone (**2**) isolated from this plant in this paper.

Figure 1 Structures for **1** and **2**



Compound **1** was isolated as white crystals, mp 201-202°C, $[\alpha]_D^{23} +14$ (*c* 0.21, MeOH). Its molecular formula was determined as C₁₃H₁₄O₆ by HREIMS, *m/z* 250.083 [M]⁺ (calcd. 250.0841). The IR spectrum (KBr, cm⁻¹) exhibited absorption bands for (3516, 3477, and 3375), saturated δ-lactone (1759 and 1028) and phenyl (1610 and 1497).

The ¹H NMR data for **1** was very similar to those of goniopyprone except for the coupling constants between H-7 and H-8 and their peak shapes (see **Table 1**) revealing that compound **1** was a stereoisomer of goniopyprone. The signals for H-8 (δ 4.78) and H-6 (δ 4.41) showed NOE enhancements when H-7 (δ 3.90) was irradiated, which suggested that H-6, H-7 and H-8 were β-oriented, however, no NOE enhancements of the signals for H-5α (δ 4.60) was observed when H-8 irradiated indicating that H-5 was

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α -oriented, this was in accordance with the orientation of the analogous chiral carbon in goniopyrone.

Table 1 ^1H (500MHz) and ^{13}C (125MHz) NMR Spectral Data for **1** in CD_3OD and **2** in CDCl_3

Position	1		2	
	δ_{H}	δ_{C}	δ_{H}	δ_{C}
1			4.82, m	72.5
2		178.6		
3 α	2.45, d, (17.5)	40.9		169.0
3 β	2.93, dd, (17.5, 5.0)			
4	4.53, t, (5.0)	68.7	2.91, dd, (18.0, 5.1)	36.2
			3.03, d, 18.0	
5	4.60, dd, (7.0, 5.0)	88.3	4.59, brs	66.9
6	4.41, d, (7.0)	70.3		
7	3.90, d, (8.0)	74.4	5.02, d, (2.1)	68.2
8	4.78, d, (8.0)	75.3	5.21, d, (2.1)	69.4
9			1.92, dd, (14.5, 4.0)	24.8
			2.50, dt, (14.5, 2.0)	
1'		144.2		136.4
2' (6')	7.46, m	128.1	7.32, m	126.3
3' (5')	7.36, m	128.4	7.29, m	128.1
4'	7.28, m	128.4	7.29, m	128.0
AcO			1.83, s	20.4, 168.5

Compound **2** was obtained as a white powder, mp 194-196°C, $[\alpha]_{\text{D}}^{23} +21$ (*c* 0.23, CHCl_3). Its molecular formula was assigned as $\text{C}_{13}\text{H}_{14}\text{O}_6$ on the basis of HREIMS at m/z 276.0985 $[\text{M}]^+$ (calcd. 276.0997). The IR spectrum (KBr , cm^{-1}) displayed absorption bands for hydroxyl (3465), saturated δ -lactone (1743 and 1086) and aromatic ring (1608 and 1496). A preliminary examination of the ^1H NMR data of **2** revealed that **2** was styryllactone-type compound (see **Table 1**). Comparison of the ^1H NMR data of **2** with those of 9-deoxygoniopyrone showed that an acetoxy was present in **2** in place of a hydroxyl at C-8 in 9-deoxygoniopyrone. In **2**, the resonances for the protons at δ 1.83 (s, 3H) and the carbons at 168.5 and 20.4 showed the presence of an acetyl, and H-8 was shifted downfield by 1.24 ppm. The ^1H NMR data and the TLC R_f value of acetylate of 9-deoxygoniopyrone were identical to **2**, which further supported that **2** is an acetyl derivative of 9-deoxygoniopyrone.

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