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A Minor New Diterpenoid Alkaloids from the Roots of *Delphinium Souliei* Franch

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Abstract: A minor new diterpenoid alkaloid, soulidine, was isolated from the roots of *Delphinium Souliei* Franch, its structure was established on the basis of spectral evidences.

Keyword: *Delphinium souliei*, new deterpenoid alkaloid, soulidine, spectral data.

In our previous papers[1-3], we have reported the isolation and elucidation of a series of new diterpenoid alkaloids from the aerial part of *Delphinium souliei* Franch. In this study, phytochemcal investigations on the constituents of the roots of this plant have led to the isolation of a minor new diterpenoid alkaloid soulidine.

Soulidine (4mg) was obtained as colorless crystals, mp: 90~91 °C (from ethanol), $[\alpha]_D^{24}$ +35.0 (c=0.2, $CHCl_3$). Its molecular formula $C_{27}H_{41}NO_8$ was derived from HREIMS (M^+: 507.2825, calc. 507.2821). Twenty seven signals in ^{13}CNMR(DEPT) were recognized (5xC, 9xCH, 7xCH_2 and 6xCH_3). The ^{1}HNMR spectrum (400MHz) exhibited the following signals for the protons of 7, 8-methylenedioxy group at δ 5.07 and 5.11 (each 1H, s) and two signals for the protons of four methoxy groups at δ3.46 (9H, s,) and 3.33 (3H, s). The signal at δ 2.10 (3H, s) in the ^{1}HNMR、 the signals at δ 169.7 (s) and 21.5 (q) and the absorption at 1737cm^{-1} in IR showed the presence of an acetoxy group in the molecule, No signal in NMR for N-CH_2CH_3 and the singlet at δ 2.10 (3H) indicated the existence of a N-CH_3 in the molecule, thus this compound could be elucidated as C_{19}- diterpenoid alkaloid with of 7, 8-methylenedioxy skeleton[4]; Seven oxygenated C-atoms in this molecule appear at δ 77.4 (d), 78.1 (t), 81.5 (d), 81.6 (d), 84.3 (s), 84.6 (d) and 90.5 (s). By comparing the ^{13}CNMR of this compound with that of delcorine[5], the four methoxy group could be assigned C-1, C-14, C-16 and C-18, the acetoxy group could be assigned C-6, because of the relative high-field shift of C-5 and C-7 in this compound (1.4 ppm for C-5 and 2.2 ppm for C-7 in comparison with that of delorine), the signal at δ 5.42 (1H, s) (HMQC experiment verified that the proton is attached to C-6) in ^{1}HNMR suggested that H-6 is α-oritented[5]. The data of ^{13}CNMR (DEPT) appear in **Table 1**.

On the basis of these spectral data, the structure of soulidine was established as that shown in **Figure 1**, and it is a new C_{19}-diterpenoid alkaloid.

Figure 1 Soulidine

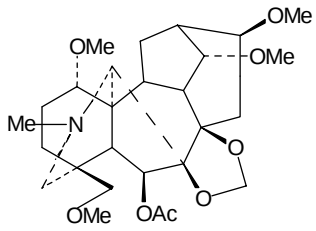

Table 1 ^{13}CNMR data of Soulidine(**1**) , delcorine(**2**)

C-atom	1	2	C-atom	1	2
1	84.6, d	83.1	16	81.5, d	81.8
2	26.3, t	26.4	17	61.7, d	63.9
3	33.0, t	31.8	18	78.1, t	78.9
4	37.3, s	38.1	19	56.4, t	53.7
5	51.2, d	52.6	N-CH_2		50.7
6	77.4, d	78.9	CH_3		14.0
7	90.5, s	92.7	-OCH2O-	93.5, t	92.9
8	84.3, s	83.9	1- Ome	56.2, q	55.5
9	49.1, d	48.1	14-OMe	57.7, q	57.8
10	42.1, d	40.3	16-OMe	56.3, q	56.3
11	53.1, s	50.2	18-OMe	61.7, q	59.6
12	28.1, t	28.1	6-OCO	169.7, s	--
13	37.3, d	37.9	CH3	21.5, q	
14	81.6, d	82.5	-NME	41.2, q	--
15	34.8, t	33.3			

s, d, t and q refer to C, CH, CH_2 and CH_3

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