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PHELLODENDRINE FROM *Phellodendron lavallei* INTRODUCED INTO GEORGIA

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The alkaloid phellodendrine (**1**) is a protoberberine base and was isolated from the cork trees *Phellodendron amurense* Rupr., *P. chinease* Sohneid, *P. wilsonii* Hayate et Kemachica, and *P. amurense* Rupr. var. *Sachalinense* Fr. Phellodendrine has not been reported from *P. lavallei* [1–3].

We studied total water-soluble alkaloids from bark of *P. lavallei* introduced into Georgia.

Pharmacological testing of the dry aqueous extract of this plant containing the alkaloids berberine, palmatine, jatrorrhizine, and magnoflorine showed anti-inflammatory, hypoglycemic, and hypolipidemic activity [4, 5].

The raw material for obtaining water-soluble total alkaloids was ground bark of *P. lavallei* that was extracted beforehand with Freon-12. The plant material (200 g) purified in this manner of lipophilic substances was extracted with H_2O (2×) by standing at room temperature. The combined aqueous extracts were condensed. Soluble polysaccharides were precipitated by EtOH. The mixture was filtered. The filtrate was condensed to dryness and separated over a column of silica gel. The mobile phase was $CHCl_3$:MeOH:NH_4OH (10%) (15:4:1). Amorphous **1** was isolated from the first effluents.

The alkaloid was identified using mass, PMR, ^{13}C NMR, and DEPT spectral characteristics compared with the literature, TLC mobility using BuOH:HCO_2H:MeOH:H_2O (30:50:10:10), and comparison with a phellodendrine standard (Phytomarker Ltd., China). PMR, ^{13}C NMR, and DEPT spectra were taken in MeOD on a Bruker-300 instrument.

Base **1**, $C_{20}H_{24}NO_4$. Mass spectrum (EI, 70 eV, *m*/*z*): 342.34 (100) $[M]^+$, 239, 192 (9), 143, 102 (25), 74. Table 1 presents the PMR, ^{13}C NMR, and DEPT data.

Compound **1** was identified as phellodendrine based on mass, PMR, ^{13}C NMR, and DEPT results in addition to TLC mobility compared with a standard sample of the alkaloid [1, 3].

The alkaloid phellodendrine was observed for the first time in bark of cork trees introduced to Georgia.

TABLE 1. PMR, ^{13}C NMR, and DEPT Spectral Data for Phellodendrine (δ, ppm)

C atom	δ_C	δ_H	DEPT	C atom	δ_C	δ_H	DEPT
1	113.0	6.73 (1H, s)	CH	10	149.9		C
2	147.0		C	11	148.9		C
3	148.5		C	12	115.5	6.88 (1H, s)	CH
4	114.0	6.67 (1H, s)	CH	12a	125.5		C
4a	120.0		C	13	35.0		CH_2
5	24.1	3.3 (2H, m)	CH_2	13a	67.2		CH
6	53.2	4.7 (2H, m)	CH_2	14	117.7		C
8	65.0		CH_2	OCH_3-2	56.6	3.6 (3H, s)	
8a	123.2		C	OCH_3-10	56.5	4.62 (3H, s)	
9	111.0	6.79 (1H, s)	CH	N-CH_3	50.9	1.34 (3H, m)	

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