

ALKALOIDS OF *Thalictrum orientale* GROWING IN TURKEYF. Z. Erdemgil,¹ M. V. Telezhenetskaya,²
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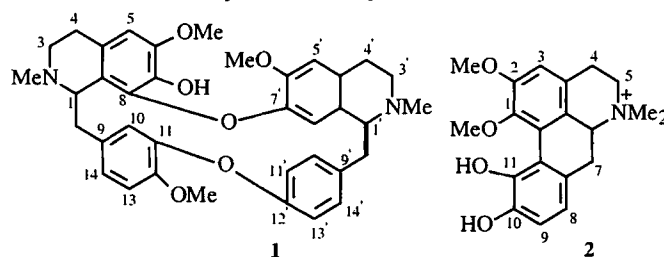
Thalictrum orientale (Ranunculaceae) is a tiny plant growing out of crevices on rocky slopes and has a narrow distribution [1]. To the best of our knowledge, besides our group, no one else has carried out a study on this species. Here we report the isolation and structural elucidation of three compounds from an ethanolic extract of the dried underground part of *T. orientale*. The ethanolic extract was fractionated according to a previously described procedure [2].

From the ether-soluble part, compound **1** was isolated. Spectral data as well as comparison with an authentic sample has confirmed its identity as fangchinoline [2]. Fangchinoline (**1**) was the most abundant alkaloid in the underground parts of *T. orientale*.

Fangchinoline was first isolated from the Chinese drug Han-fung-chi. Then, the isolation of this alkaloid from some members of the family Menispermaceae such as *Stephania hernandifolia*, *S. tetrandra*, *Cyclea peltata*, *C. barbata*, *Cissampelos pareira*, *Triclisia subcordata*, and *Daphnandra* species (Monimiaceae) was reported [3, 4]. This is the first report on the occurrence of fangchinoline in the genus *Thalictrum*.

Fuzitine (**2**) was obtained as a dark-brown residue. This aporphine derivative is a minor component of the quaternary alkaloid fraction. Comparison of its spectral and physicochemical features with those found in the published literature established the identity of this alkaloid as fuzitine. It was previously reported to be present in *Aconitum carmicheali* Debx [5]. This is the first report of its occurrence in the genus *Thalictrum*. The third alkaloid obtained from the quaternary and ether-soluble nonphenolic alkaloid fraction was determined as berberine. Spectral data as well as comparison with an authentic sample confirmed its identity.

Underground parts of *Thalictrum orientale* Boiss. were collected from Nigde:Ulukisla, Horoz village, Turkey in May at an altitude of 1000 m. The plant was identified at the Department of Pharmacy, Anadolu University, Eskisehir, Turkey. Voucher specimens were kept at the Herbarium of the Faculty of Pharmacy (ESSE) at the same university.



Melting points. Gallenkamp; **Optical rotations:** POL-S2 polarimeter (the optical rotation was measured in MeOH); UV: Shimadzu UV-160A, Lambda-16 Perkin Elmer, Hitachi (UV spectra were taken in EtOH); IR: Shimadzu IR-435 (IR spectra were recorded in a KBr disk); NMR: BC-567A Tesla (100 MHz), Jeol JNM-EX90A (90 MHz) (solutions in CD₃OD, CDCl₃, or D₂O were used for the NMR studies).

Fangchinoline (1): Light yellow, needle shaped crystals in MeOH, $[\alpha]_D^{24} +126.18^\circ$ (c 0.55; MeOH); m.p. 153–156°C; UV (EtOH, λ_{\max} , nm): 282 sh, 209 sh; MS (MHz, 70 eV): 608 [M⁺], 417, 381, 380, 367, 283, 191 (100); IR (KBr, cm⁻¹, ν): 3534 (OH), 2933, 1585–1445, 1232, 1060; ¹H-NMR (100 MHz, δ , CDCl₃), 2.32(3H, s, N-Me), 6.29 (1H, s, H-5), 3.76 (3H, s, 6-OMe), 6.57 (1H, d, H-10), 3.92 (3H, s, 12-OMe), 6.86 (2H, dd, H-13, H-14), 2.62 (3H, s, N-Me), 6.52 (1H, s, H-5'), 3.34 (3H, s, 6'-OMe), 6.06 (1H, s, H-8'), 7.34 (1H, dd, H-10'), 7.13(1H, dd, H-11'), 6.91 (1H, dd, H-13').

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Fuzitine (2): dark brown, amorphous, $[\alpha]_D^{24} +275^\circ$ (*c* 0.59; MeOH); m.p. 205–210°(dec.); UV (EtOH, λ_{\max} , nm): 324 sh, 320 sh, 278 sh; MS (*m/z*, 70 eV): 342 [*M*⁺] (6), 341 (23), 327 (3), 312 (1), 284 (3), 268 (4), 206 (3), 165 (3), 152 (3), 58 (100). ¹H-NMR (90 MHz, δ , D₂O): 2.54 (3H, s, N-Me), 3.28 (3H, s, N-Me), 3.66 (3H, s, OMe), 6.44 (1H, s, H-3), 6.35 (1H, d, *J* = 8 Hz, H-8), 6.64 (1H, *J* = 8 Hz, H-9).

REFERENCES

1. P. H. Davis, *Flora of Turkey and the East Aegean Islands*, Vol. 1. Edinburgh Univ. Press, UK, 1965, 199
2. K.H.C.Baser, *Alkaloitleri. Doga, Seri A* **5**, 163 (1981)
3. M.Tomita, M.Kozuka, S.T.Lu, *Yakugaku Zasshi*, **87**, 316 (1967)
4. C.H.Goepel, T.Yupraphat, P.Pachaly, F.Zymalkowski, *Planta Medica*, **26**, 94 (1974)
5. H.S.Chen, G.Y.Han, M.Z.Liu, N.Q.Liang, *Chin. Chem. Lett.*, **2**, 787 (1991)