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# (−)-TURKIYENINE, A NEW ALKALOID FROM *CHELIDONIUM MAJUS*

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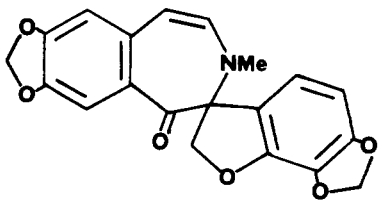
ABSTRACT.—The new alkaloid (−)-turkiyenine [**1**] has been obtained from *Chelidonium majus*. It is enantiomeric with the previously known (+)-turkiyenine found in *Hypecoum procumbens*.

The unusual alkaloid (+)-turkiyenine [**1**] was found in *Hypecoum procumbens* L. (Papaveraceae) (1). At a later date, (+)-oxoturkiyenine [**2**] was obtained from *Hypecoum pendulum* (2).

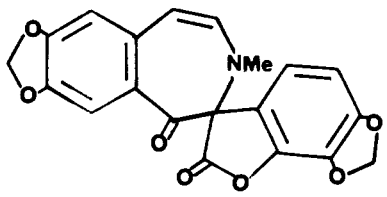
Presently, as a result of a study of Turkish *Chelidonium majus* L. (Papaveraceae), an annual plant well investigated in the past (3), we have isolated and characterized the new alkaloid (−)-turkiyenine [**1**], $C_{20}H_{15}NO_6$, enantiomeric with the *H. procumbens* base. (−)-Turkiyenine exhibits $[\alpha]_D$ −76° ($c = 0.11$, MeOH) and $[\alpha]_D$ −99° ($c = 0.12$, $CHCl_3$). The uv, ir, ms, and $^1$H-nmr spectra of (−)-turkiyenine correspond to those previously reported for (+)-turkiyenine. Additionally, the two enantiomers display corresponding tlc $R_f$ values in different solvent systems.

The isolation of (−)-turkiyenine from *C. majus* suggests that turkiyenine-type alkaloids may be more common among plants belonging to the Papaveraceae family than previously thought. It should be noted that the absolute configurations for the turkiyenines still remain to be established.

Other alkaloids we have found in *C. majus* are the known protopine, (−)-stylopine, (+)-chelidonine, (±)-8-methoxydihydrosanguinarine, chelidimerine, (+)-homochelidonine, (±)-8-acetonyldihydrosanguinarine, dihydrosanguinarine, oxysanguinarine, angoline, dihydrochelerythrine, norsanguinarine, and (±)-8-acetonyldihydrochelerythrine. These were identified by comparison with authentic samples and/or by spectral comparisons and specific rotations.




**1**




**2**

## EXPERIMENTAL

PLANT COLLECTION AND ALKALOID EXTRACTION.—*C. majus* was collected on June 8, 1988 near Gümüshane, Turkey. A sample, No. 1093, was deposited in the herbarium of the Pharmacognosy Department, Faculty of Pharmacy, Ege University. The dried, powdered, whole plant (4 kg) was extracted with EtOH at room temperature. The usual acid-base workup involving 5% HCl and $NH_4OH$ provided 15 g of crude alkaloids. This material was fractionated on a Si gel column. Elution was with $CHCl_3$ followed by $CHCl_3$ gradually enriched with MeOH.

Alkaloids obtained were protopine (1.85 g), (+)-chelidonine (2.42 g), (−)-stylopine (0.40 g), (±)-8-methoxydihydrosanguinarine (0.19 g), chelidimerine (5 mg), (+)-homochelidonine (40 mg), (±)-acetonyldihydrosanguinarine (58 mg), dihydrosanguinarine (31 mg), oxysanguinarine (65 mg), angoline (11 mg), dihydrochelerythrine (38 mg), norsanguinarine (8 mg), and (±)-8-acetonyldihydrochelerythrine (15 mg), as well as amorphous (−)-turkiyenine [**1**] (5 mg).

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