

**CULIRINE-TYPE ALKALOIDS FROM *CORYDALIS RUTIFOLIA*
SUBSP. *ERDELII***

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ABSTRACT

The tubers of *Corydalis nutifolia* subsp. *erdellii* were analyzed for their alkaloidal content. Chromatographic separation of the alkaloid extract of the plant material resulted in the isolation of 25 isoquinoline alkaloids. Among these, oxoarcocapindine and oxoculirine have been isolated for the first time from this plant.

Introduction

In the course of systematic studies on the alkaloids of *Corydalis* species growing in Turkey (Seiler, 1986-1989), we studied for the first time the alkaloidal content of *Corydalis nutifolia* (Sibth. and Sm.) DC. subsp. *erdellii* (Zucc.) Cullen and Davis. The present work describes the isolation and structure elucidation of the culirine-type alkaloids from the tubers of this plant.

Materials and Methods

Plant material

The tubers of *C. nutifolia* subsp. *erdellii* were collected from the Zorkum plateau near Adana (Turkey). The plant was identified by Professor Dr. Bilge Sener and a voucher specimen is kept in the Herbarium of Faculty of Pharmacy, Ankara University.

Extraction and isolation

The methanolic extract of the air-dried and powdered tubers was evaporated to a gum and dissolved in 3% HCl. The mixture was kept in the refrigerator for 24 hours. Following filtration, the solution was washed with petroleum ether (b.p. 40-60°), made basic with 10% NH₄OH and the alkaloids extracted with chloroform. The organic phase was separated, dried over anhydrous sodium sulphate and evaporated under reduced pressure to dryness. The crude alkaloids were subjected to chromatography on a silica gel column. Elution was made with CHCl₃ containing increasing percentages of MeOH and the eluates were monitored by TLC. Fractions of similar contents were combined and further separated and purified by preparative

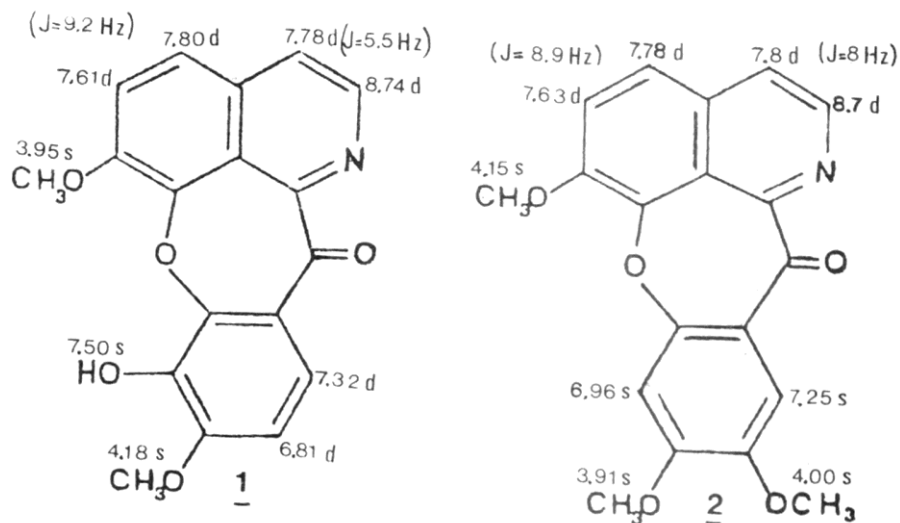
TLC (Sener, 1988).

Results and Discussion

After extraction of the crude alkaloids of *C. rutifolia* subsp. *erdellii* by usual methods (Sener, 1988), they were separated by column chromatography and preparative TLC to afford compounds 1 and 2 along with the other isoquinoline alkaloids. Among them, benzophenanthridine alkaloids from this plant have been reported (Sener *et al.*, 1992).

Oxosarcocapnidine (1), $C_{18}H_{13}NO_5$, was obtained as yellow crystals, m.p. 228°C. The compound showed UV absorption maximum at 252 nm. The IR spectrum featured strong absorptions at 3425, 1665 and 1610 cm^{-1} due to OH, C=O and C=C stretching vibrations, respectively. The 1H -NMR spectrum (360 MHz, $CDCl_3$) of (1) showed two three proton singlets at 3.95 and 4.18 ppm assigned to methoxyl protons and six doublets belonged to six aromatic protons. The chemical shift assignments in the 1H -NMR spectrum of (1) are summarized as 6 values around the structure. The EI mass spectrum of (1) displayed a $[M^+]$ at m/z 323 corresponding to the molecular formula $C_{18}H_{13}NO_5$ and base peak. These findings coupled with the data reported for oxosarcocapnidine isolated from *Sarcocapnos* species (Castedo and Suau, 1986) allow alkaloid (1) to be identified as oxosarcocapnidine.

Literature survey revealed that oxosarcocapnidine has been obtained for the first time from the genus *Corydalis*. Oxocularine (2), $C_{19}H_{15}NO_5$, was isolated as an amorphous powder. It showed UV absorption at 254 nm. The IR spectrum showed peaks at 1662 (C=C), 1605, 1575 and 1500 (C=C) cm^{-1} .



The $^1\text{H-NMR}$ spectrum (360 MHz, CDCl_3) of (2) are summarized as 6 values around the structure. The EI mass spectrum of compound (2) showed $[\text{M}^+]$ at m/z 337, in agreement with the molecular formula $\text{C}_{19}\text{H}_{15}\text{NOS}$. The base peak is at m/z 294. These studies confirmed the data reported for oxocularine (Castedo and Suau, 1986) and indicate alkaloid (2) to be identified as oxocularine.

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