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NOTE

Extraction and Characterization of 7-Hydroxycoumarin from *Pseudohandellia umbelliferae*

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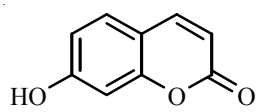
Pseudohandellia umbelliferae collected from Kalat Naderi area, Khorasan Razavi province, Iran was investigated and confirmed the presence of 7-hydroxycoumarin by spectroscopic methods.

Key Words: *Pseudohandellia umbelliferae*, 7-Hydroxycoumarin, Chromatography, Soxhlet apparatus, Hepatotoxic.

Pseudohandellia umbelliferae is a 20-100 cm high, more or less, covered with profuse cobwebby tomentum. It is stems solitary or a few, rather thick, upright, branched only at apex, flowering between May to July[1]. This plant, as it has been reported[2], is distributed in Iran, Afghanistan and Central Asia.

For a safe utilization of any medicinal plant as a medicine, its standardization is necessary to guarantee the plant drug authenticity and its content of active principles according of the parameters utilized as quality criteria. Coumarin has been reported to be a hepatotoxic compound in test animals and is listed as a suspected carcinogenic compound[3].

To our best of knowledge there is no record of the chemical constituents of this plant. This paper describes the isolation of the only coumarin derivative available, 7-hydroxycoumarin, from acetone extract of the aerial parts of *Pseudohandellia umbelliferae*.



7-Hydroxycoumarin

Melting point was measured on a Bamstead/electrothermal 9200 melting point apparatus. ^{1}H NMR spectra was measured in $CDCl_3$, on a Brucker AC 100 MHz NMR spectrometer. Chemical shift is expressed in δ units relative to TMS (δ = 0) as internal standard. Mass spectra was recorded on a Shimadzu GC-17A spectrometer operating at 70 eV in electron impact mode. FT-IR was performed on a Shimadzu 8400.

The aerial parts of *Pseudohandellia umbelliteratae* were collected from Kalat Naderi area, Khorasan Razavi province, Iran, in April 2006 by Mr. M.R. Joharchi. A voucher specimen is deposited at the Herbarium of the Research Institute of Forests and Rangelands, in the University of Ferdowsi, Mashhad, Iran.

Extraction and isolation: The aerial parts of *Pseudohandellia umbelliteratae* are dried at ambient temperature and powdered. The powder was successively extracted with acetone in a Soxhlet apparatus over 6 h. The organic solvent was evaporated to dryness in vacuum to yield the corresponding extracts (11 %, w/w).

Thin layer chromatographic (TLC) analyses were made on 0.25 mm thick silica gel 60G (Merck, 7731), prepared on glass plates. As eluent, a mixture of toluene:ethyl ether (1:1) saturated with 10 % acetic acid was used, after solvent evaporation the plates were sprayed with an ethanolic solution (5 % v/v) of KOH. After spraying, the plate was examined under UV light at 366 nm. Only one of the spot (R_f = 0.44) out of four was observed as a blue colour. The acetone extract was also chromatographed on a silica gel column, using the same gradient elution system as mentioned above, to yield a colourless crystals (54 mg), m.p. 225-227 °C, (KBr, ν_{max}, cm^{-1}): 3300 (OH), 1300, 1720 (C=O) 1660 (C=C-CO), 1120, 1240 and 750; NMR (90 MHz, $CDCl_3$, δ ppm, J/Hz) 6.0-6.2 (1H, d, *J* = 9, CO-CH=CH), 6.5 (1H, s, Ar), 6.7-6.9 (1H, d, *J* = 1.8, Ar), 7.4-7.6 (1H, d, *J* = 7.2, Ar), 7.8-8.0 (1H, d, *J* = 9, CO-CH=CH) and 10.0 (1H, s, OH); Mass spectrum (EI, 70 ev) m/z (I_{rel}, %): 162 [M^+] (100), 134 (90), 105 (20), 78 (30) and 52 (20).

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