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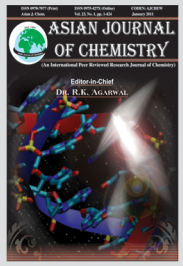

NOTE

Extraction and Characterization of Naringenin from *Psuedohandellia umbelliferae*

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Pseudohandellia umbelliferae collected from Kalat Naderi area, Khorasan Razavi province, Iran was investigated for the presence of naringenin, 5,7-dihydroxy 2-(4-hydroxyphenyl)chroman-4-one by spectroscopic methods.

Key Words: *Pseudohandellia umbelliferae*, Chromatography, Soxhlet apparatus, Naringenin.

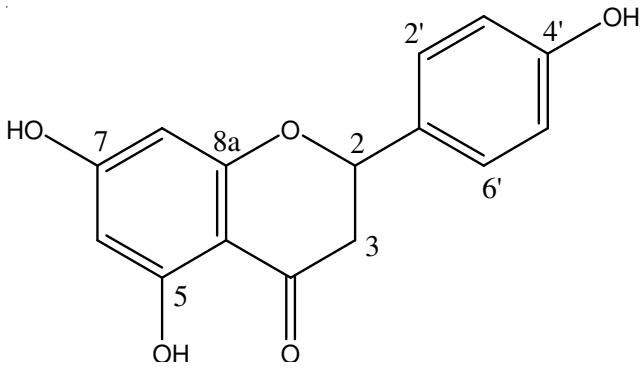
Pseudohandellia umbelliferae is a plant with a 20-100 cm high, leaves greyish with loose cobwebby tomentum, main rootstock thickened and heads numerous in dense umbel-shaped compound corymbs, flowering between May to July[1]. Following our research on the chemical constituents of this plant[2], we describe in this paper the isolation and characterization of a flavonoid, narigenin, from methanol extract of the aerial parts of *Pseudohandellia umbelliferae*.

Melting point was measured on a Bamstead/electro-thermal 9200 melting point apparatus. ^{1}H and ^{13}C NMR spectra were recorded in DMSO, on a Brucker AC 100 MHz NMR spectrometer. Chemical shift is expressed in units relative to TMS ($\delta = 0$) 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 umbelliferae* 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 *Pseudo-handellia umbelliferae* are dried at ambient temperature before being powdered. The powder was successively extracted with methanol in a Soxhlet apparatus over 6 h. The organic solvent was evaporated to dryness in vacuum to yield the corresponding extracts (11 %, w/w).

Phytochemical tests were carried out on the methanol extract and on the powdered specimens to identify the consti-tuents using standard procedures[3-5]. The tests revealed the presence of a flavonoid.



Naringenin

Thin layer chromatographic (TLC) analyses were made on 0.25 mm thick silica gel 60G (Merck, 7731), prepared on glass plates. A mixture of chloroform/methanol (2:3) proved to be the best eluent for the TLC analysis. The plate was examined under UV light at 254 nm. Only one of the spot ($R_f = 0.8$) out of four was observed as a dark blue colour. The methanol extract was also chromatographed on a silica gel column, using the same gradient elution system as mentioned above, to yield a pale yellow crystals (200 mg), m.p. 239-241 ºC, IR (film, ν_{max}, cm^{-1}): 3600 (OH), 3400 (OH), 3050 , 1650 (C=O) 1600 (C=C), 1250, 1300, 840 , 730 and 690; ^{1}H NMR (100 MHz, DMSO) δ 2.6 (d, 1H), 3.2 (1H), 5.5 (dd, 1H, Ar), 6 (s, 2H , Ar), 6.7 (d, 2H, J = 8.5, Ar), 7.4 (d, 2H, J = 8.5, Ar), 9.7 (s,1H, OH), 12.1 (s, 2H, OH); ^{13}C NMR (100 MHz, DMSO) δ, 196 (C=O), 166, 163, 162, 157, 129, 128, 115, 101, 95, 94, 78, 42; MS (EI)(m/z, %) 272 [M$^+$] (100), 179 (23), 166 (23), 153 (81), 124 (31), 120 (53), 107 (30), 91 (31), 69 (29), 50 (5) and 39 (26); UV(λ_{max}, MeOH, nm) 219,289, 330; which is a typical

absorptions of flavanones and carbonyl group (1650 cm^{-1}). The ^{13}C NMR spectrum showed the resonance of six aromatic methine carbons, C-3', C-5' (δ 115), C-2', C-6' (δ 128), C-8 (δ 94) and C-6 (δ 95), six quaternary aromatic carbon at C-7 (δ 166), C-5 (δ 163), C-8a (δ 162), C-4a (δ 101), C-1' (δ 128) and C-4' (δ 157), an oxymethine carbon signal C-2 (δ 78), an methylene carbon C-3 (δ 42) and finally a carbonyl carbon C-4 (δ 196).

Conclusion

Naringenin, was extracted and isolated from the aerial parts of *Pseudohandellia umbelliferae* using methanol. The chemical structure of narigenin was characterised by spectroscopic methods.

ACKNOWLEDGEMENTS

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