

## SHORT COMMUNICATIONS

### Flavonoids from *Herniaria Mauritanica*

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From the aerial parts of the medicinal plant *Herniaria mauritanica* Murbeck, were isolated for the first time five flavonoid derivatives. They were identified as isorhamnetin, kaempferol, quercetin, astragalin and isoquercitrin.

**H**ERNIARIA *mauritanica* Murbeck, is an endemic herbaceous plant of Algeria, belonging to Caryophyllaceae family (Subfam. Paronychioideae : Illecebraceae), which is widely distributed in south - west Algeria.<sup>1,2</sup> It is known under the common name "Fetet Hadjra", and used in folk medicine as a diuretic, antiinflammatory agent against inflammatory conditions of urinary tract and for the treatment of lithiasis.<sup>3,4</sup>

To our knowledge, there are no literature reports to date on the phytochemical constituents of this plant, but a number of other *Herniaria* species, *H. glabra*<sup>5-13</sup>, *H. hirsuta*<sup>7,9,13</sup>, *H. ciliolata*<sup>14</sup>, *H. polygama*<sup>9,15</sup> and *H. fontanesii*<sup>16</sup>, were found to contain triterpenoid saponins, flavonoids, flavonoid glycosides, coumarins, tannins and phenolic acids.

Following our previous work on the chemical constituents of Algerian medicinal plants,<sup>3,17</sup> the present report deals with the isolation and identification of five flavonoid compounds that are present in the aerial parts of *Herniaria mauritanica*.

The aerial parts (stems and leaves) of *H. mauritanica* were collected in June 1992, at El-Bayadh district (South-west of Algeria) and authen-

ticated by the Laboratoire de botanique (Universite Aix - Marseille 3, France). A voucher specimen is deposited at the herbarium of the Direction Regionale de l'Agriculture d'El-Bayadh (Algeria).

The air - dried powdered aerial parts of *H. mauritanica* were exhaustively extracted in a Soxhlet apparatus with 90% methanol. The residue obtained after evaporation *in vacuo* was partitioned between Et<sub>2</sub>O and H<sub>2</sub>O. The organic layer was separated and the aqueous layer was extracted with EtOAc. All extracts were evaporated under reduced pressure after drying over anhydrous Na<sub>2</sub>SO<sub>4</sub>. The ether extract was chromatographed over silica gel. On eluting with a mixture of CHCl<sub>3</sub> - MeOH in increasing polarities and repeated column chromatography of different fractions yielded three flavonoids identified as isorhamnetin (1), mp 305°, kaempferol (2), mp 277 - 279,<sup>0</sup> and quercetin (3), mp 314°. The ethyl acetate extract was applied on a silica gel column and on eluting with CHCl<sub>3</sub> - acetone with increasing polarities, the two compounds identified as kaempferol 3-O-glucoside (astragalin) (4), mp 176 - 178°, and quercetin 3-O-glucoside (isoquercitrin) (5), mp 233-235° were isolated.

The separated substances (1-5) were identified by UV, [<sup>1</sup>H]NMR, IR and by direct comparison with authentic samples through mp, mmp, and co-chro-

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matography (TLC) in different solvent systems. The position of the free hydroxyl groups were deduced from the UV spectra in methanol by addition of several shift reagents.<sup>18,19</sup> The measured spectral values and color reactions for different compounds isolated are in accordance with literature.<sup>19</sup>

Acid hydrolysis of (4) and (5) with 0.1 N HCl at 100° for 1 hour, afforded (2) and (3) as the aglycones respectively, identified as described above and D-glucose as a sugar moiety identified by direct comparison with a commercial sample on paper chromatography.

### REFERENCES

- Ozenda, P., "Flore et vegetation du sahar", 3rd Ed. CNRS, Paris, 1991, 209.
- Quezel P., and Santa, S., "Nouvelle flore de l'Algerie et des regions desertiques meridionales", Vol. 1, Ed. CNRS, Paris, 1962, 317.
- Cheriti, A. and Sekkoum, K., "8th journee de la chimie", Held in Marseille (France), 1995, Poster No. 13.
- Cheriti, A., Rouissat, A., Sekkoum, K. and Balansard, G., *Fitoterapia*, 1995, 66, 525.
- Reznicek, G., Cart J., Korhammer, S., Kubela, W., Jurenitsch, J. and Haslinger, E., *Pharmazie*, 1993, 48, 450.
- Schroder, H., Schubert-Zsilavec, M., Reznicek, G., Cart, J., Jurenitsch, J. and Haslinger, E., *Phytochemistry*, 1993, 34, 1609.
- Klein G., Jurenitsch, J. and Kubelka, G., *Sci. Pharm.*, 1982, 50, 216.
- Kartnig, T., Wegschaider, O., *Planta med.*, 1972, 21, 144.
- Komissarenko, N.F., *Khim. Prir. Soedin.*, 1970, 6, 624. *Chem. Abstr.*, 1971, 74, 50524x.
- Khalmatov, Kh.Kh. and Primukhamedov, I., *Rast. Resur.*, 1967, 3, 442, *Chem. Abstr.* 1968, 68, 66392q.
- Horhammer L., Wagner, H. and Probst, W., *Naturwissenschaften*, 1960, 47, 63.
- Borkowski, B. and Pasich, B., *Planta Med.*, 1958, 3, 225.
- Krolikowska, M. and Wolbis, M. *Acta Pol. Pharm.*, 1979, 36, 469. *Chem. Abstr.*, 1980, 93, 22644k.
- Krolikowska, M. Miroslawa, S. and Wolbis, M., *Acta Pol. Pharm.*, 1983, 40, 643. *Chem. Abstr.* 1984, 101, 167166z.
- Bouguslavskaya, L.I., Tikhonov, A.I., Pashnev, P.D., Bekkari, J. and Sklyar, V.I., *Khim. Prir. Soedin.*, 1985, 103, 51222b.
- Nait Mbark, A., Charrouf, Z., Wieruszeski, J.M., Leroy, Y. and Kol, O., *Nat. Prod. Let.*, 1995, 6, 233.
- Cheriti, A. and Sekkoum, K., *Acta Chem. Slov.*, 1995, 42, 373.
- Markham, K.R., "Techniques of Flavonoid Identification", Academic Press, London, 1982, 36.
- Mabry, T.J., Markham, K.R. and Thomas, M.B., "The Systematic Identification of Flavonoids", Springer Verlag, Berlin, 1970, 41.