

METHOXYFLAVONES FROM *BACCHARIS PATENS*

GILBERTO A. B. SILVA, AMELIA HENRIQUES, CECILIA BAULVA ALICE

Curso Pos Graduação, Faculdade de Farmacia, Universidade Federal do Rio Grande Do Sul, Porto Alegre, 90000 Brasil

JACQUELINE GLEYE, and CLAUDE MOULIS

Faculté des Sciences Pharmaceutiques, Université Toulouse III 31, Allées Jules Guesde, 31400 Toulouse, France

Baccharis (Asteraceae) is an important genus in various parts of South America. It is composed of about 400 species, of which 36 have been described in Chile (1), 110 in Argentina (2), and 131 in Brazil (3). Twenty species of *Baccharis* have been examined for flavonoids (4).

In this communication, we report the isolation and characterization of three methoxyflavones in *Baccharis patens* Wedd. from Brazil: 5,4'-dihydroxy-6, 7, 8-trimethoxyflavone (xanthomicrol), 5, 3', 4'-trihydroxy-6,7, 8-trimethoxyflavone, and 5, 3'-dihydroxy-6, 7, 8, 4'-tetramethoxyflavone (gardenin D). Xanthomicrol is present in *Baccharis tucumanensis* (8); 5, 3', 4'-trihydroxy-6, 7, 8-trimethoxyflavone has been isolated from *Sideritis leucantha* (Labiatae) (9); and gardenin D has been reported several times (5-7). Methoxyflavones have been isolated from several species of the genus *Baccharis*, but this is the first report of the latter two compounds from this genus.

EXPERIMENTAL

GENERAL EXPERIMENTAL PROCEDURE—Spectra were recorded with the following instruments: uv, Unicam SP 800; ¹H nmr, Varian (90MHz); ms, Varian LKB 2091; details of the identification are available upon request to the senior author.

PLANT MATERIAL—*B. patens* Wedd. was collected in Southern Brazil (S. Rio Grande Do Sul). A voucher specimen is deposited in the Herbarium of the Faculdade de Farmacia, Porto Alegre, Brazil.

EXTRACTION and ISOLATION—Dried and powdered aerial parts (200 g) were extracted with EtOAc. The crude extract was dissolved in MeOH and adsorbed in filter paper. After evaporation of the MeOH, the material was successively extracted in a Soxhlet apparatus with cyclohexane and Et₂O. The Et₂O residue was chromatographed on a cellulose column with CHCl₃ and CHCl₃-MeOH. All fractions with flavonoids were collected and then chromatographed on a sephadex LH column with MeOH to give six fractions. Repeated chromatography of fraction 2 with Si gel (preparative tlc) using C₆H₆-EtOAc (9:1) and (3:1) gave xanthomicrol, yellow needles from MeOH (21 mg). In the same manner, fraction 6 gave 5, 3', 4'-trihydroxy-6, 7, 8-trimethoxyflavone, yellow needles from MeOH (25 mg) and gardenin D, yellow needles from C₆H₆ (20 mg).

LITERATURE CITED

1. C. Reiche, *Flora de Chile*, volume IV, Cervantes, Santiago, 1905.
2. L. Ariza Espinar, *Bol. Acad. Nac. Cienc.* (Cordoba), **50**, 177 (1973).
3. C.F.P. Martius, *Flora Brasiliensis*, **6**, 3, 1840.
4. F.A. Faini and M. Castillo, *J. Nat Prod.*, **45**, 501 (1982).
5. J. Pinkas, D. Lavie, and M. Chorin, *Phytochemistry*, **7**, 169, (1968).
6. A.V. Ramarao, K. Venkataraman, P. Chakrabarti, A.K. Sanyal, and P.K. Bose, *Indian J. Chem.*, **8**, 398 (1970).
7. B. Rodriguez, *Phytochemistry*, **16**, 800 (1977).
8. C.E. Tonn, P.C. Rossomando, and O.S. Giordano, *Phytochemistry*, **21**, 2599 (1982).
9. T.F. Terreres and A. Guirado, *Phytochemistry*, **18**, 185 (1979).
10. A. San Martin, J. Roviroso, R. Becker, and M. Castillo, *Phytochemistry*, **19**, 1985 (1980).
11. T.J. Mabry, K.R. Markham, and M.B. Thomas, *The Systematic Identification of Flavonoids*, Springer Verlag, New York, 1975.
12. B. Voirin, *Phytochemistry*, **22**, 2107 (1983).

Received 22 April 1985