6-METHOXYFLAVONOIDS OF *BRICKELLIA MONOCEPHALA*

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Brickellia monocephala B.L.R. (Fam. Compositae, Tribe Eupatorieae, Subtribe Alomiinae) exhibits a single monocephalic inflorescence suggesting this species may be ancestral within *Brickellia* Ell. (1, 2). This also appears to relate *B. monocephala* to the genera *Phanerostylis* R.M. King and H. Robinson (Subtribe Alomiinae) and *Hofmeisteria* Walps. (Subtribe Hofmeisteriinae) (2). In our continuing chemosystematic analysis of *Brickellia* (3-10) and its relatives, we report here from *B. monocephala* four 6-methoxyflavonoids, the 3-*O*-β-D-glactoside and 3-*O*-β-D-glucosylgalactoside of quercetagetin 6,7-dimethyl ether and the 3-*O*-β-D-galactoside and the 3-*O*-β-D-glucosylgalactoside of 6-methoxykaempferol 7-methyl ether as well as quercetin 3-methyl ether. These compounds, typical of many xeric species belonging to the main evolutionary line in *Brickellia*, suggest that the ancestral chemical pattern in *Brickellia* is based on 6,7-dimethoxylation. Our preliminary chemical studies of *Phanerostylis* (A. Gray) King and H. Robins. and *Hofmeisteria* Walps. indicate that they also contain flavonoids with the 6,7-dimethoxy function further linking them to *B. monocephala* in accord with the view of Harcombe and Beaman (2).

EXPERIMENTAL

PLANT MATERIAL.—A voucher specimen (Norris # 280) of *B. monocephala*, collected in Mexico, east of Mazamilla, State of Jalisco, August 1981, is deposited in the Plant Resources Center at The University of Texas, Austin, Texas.

EXTRACTION, ISOLATION, AND IDENTIFICATION OF FLAVONOIDS.—Aerial parts of *B. monocephala* (25 g) were extracted three times with 80% and 50% aqueous MeOH, and the concentrated syrup was partitioned against hexane, CH_2Cl_2, and EtOAc yielding fractions of 1.6 g, 3.4 g, and 15 g respectively. The material from the CH_2Cl_2 extract was chromatographed over a Polyclar column eluted with Egger's solvent (CH_2Cl_2-MeOH-EtCOMe-Me_2CO, 20:10:5:1) and yielded quercetin 3-methyl ether (11 mg). The compounds in the combined EtOAc and aqueous fractions were separated into two components on Whatmann 3MM paper in 40% HOAc. The material in each of these bands was separated over a Polyclar column eluted with EtOAc with increasing amounts of MeOH. The resulting fractions yielded the 3-*O*-β-D-galactoside (12 mg) and 3-*O*-β-D-glucosylgalactoside (10 mg) of 6-methoxykaempferol 7-methyl ether and the 3-*O*-β-D-galactoside (15 mg) and 3-*O*-β-D-glucosylgalactoside (8 mg) of quercetagetin 6,7-dimethyl ether. All flavonoids were cleaned over Sephadex LH-20 prior to uv and ^{1}H-nmr (as TMSi ethers in CCl_4) spectral analyses (11). The glycosides were hydrolyzed to their respective aglycones and sugars which were identified by authentic sample comparisons.

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