

SULFATED AND 6-METHOXYFLAVONOIDS FROM *BRICKELLIA BACCHARIDEA* (COMPOSITAE)

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(Received 3 November 1980)

Key Word Index—*Brickellia baccharidea*; Compositae; Eupatorieae; Alomiinae; 6-methoxyflavonol methyl ethers, glycosides and sulfates; 6-methoxyflavone methyl ethers.

Abstract—Thirteen known flavonoids, all containing 6-methoxyl substitution, were identified from leaves of *Brickellia baccharidea*.

In a continuation of our biochemical systematic investigation of the genus *Brickellia* (tribe Eupatorieae, Compositae) [1–4], we report here the flavonoid chemistry of *Brickellia baccharidea* Gray. Our results show that *B. baccharidea*, like *B. californica* [1], *B. laciniata* [2] and *B. veronicaefolia* [3], the other investigated members of the subsection *Baccharideae*, section *Bulbostylis* [5], produces large quantities of sulfated 6-methoxyflavonols as well as other 6-methoxylated aglycones and glycosides.

Thirteen flavonoids, all containing 6-methoxyl groups, were isolated from 82 g of leaves of *Brickellia baccharidea*: 6-methoxyapigenin (hispidulin) [1], 15 mg; 6-methoxyapigenin 7,4'-dimethyl ether (salvigenin) [4], 18 mg; 6-methoxyluteolin 4'-methyl ether (desmethoxycentaureidin) [1, 2], 25 mg; 6-methoxyluteolin 7,4'-dimethyl ether (eupatorin) [2, 4], 30 mg; 6-methoxyquercetin 7,4'-dimethyl ether (eupatin) [1–4], 12 mg; 6-methoxyquercetin 3,4'-dimethyl ether (centaureidin) [2], 10 mg; 6-methoxyquercetin 3,7,4'-trimethyl ether (casticin) [2–4], 15 mg; 6-methoxyquercetin 3,7,3',4'-tetramethyl ether (artemetin) [3, 4], 10 mg; 6-methoxyquercetin (patuletin) 3-glucoside and galactoside [1, 2], 8 mg of each; 6-methoxyquercetin 7-methyl ether (eupatolitin) 3-galactoside [1–4], 20 mg; patuletin 3-SO₃⁻ [1–3], 20 mg and eupatin 3-SO₃⁻ [1–4], 40 mg. All the compounds were identified by UV, ¹H NMR and MS before and after hydrolysis and by TLC comparison with authentic samples, all of which were previously obtained from other *Brickellia* species [1–4].

EXPERIMENTAL

Leaves and vouchers of *Brickellia baccharidea* were collected in October 1977 in the McKelligon Canyon, Franklin Mountains, El Paso County, Texas (voucher specimen J. F. Weedin 915 is

deposited in the Herbarium, Sul Ross State University, Alpine, Texas). Air-dried and ground leaf material (82 g) of *B. baccharidea* was extracted with 85 % and 50 % aq. MeOH. The extracts were combined and concd *in vacuo*. The concentrate was extracted with *n*-hexane, CHCl₃ and EtOAc. General chromatography and electrophoretic techniques were as previously described for similar studies in other *Brickellia* species [1–4]. Each compound obtained from the polyclar columns was cleaned by Sephadex LH-20 column chromatography before spectral analyses. Standard UV, ¹H NMR and MS identification procedures were employed for all of the compounds [6, 7].

Acknowledgements—We thank Drs J. F. Weedin and A. M. Powell, Sul Ross State University, Alpine, Texas, for plant collections and identifications, respectively. This work was supported by NSF grant DEB 7902703, NIH grant HD-04488 and The Robert A. Welch Foundation grant F-130 to T. J. M. and a Grant-in-Aid of Research by the Sigma Xi Scientific Research Society to B. N. T.

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