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ISORHAMNETIN 3,7-DISULPHATE FROM *FLAVERIA BIDENTIS*

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Key Word Index—*Flaveria bidentis* var. *angustifolia* O.K.; Compositae; isorhamnetin 3,7-disulphate.

EXPERIMENTAL

Plant source. Flaveria bidentis var. *angustifolia* O.K. was collected in the area of the Mar Chiquita Lake (Córdoba Province, Argentine) during the February March period and identified by Prof. Ing. Agr. A. T. Huntziker (Botanical Museum, National University of Córdoba).

Isolation. 250 g of flowers were dried, ground and extracted at low temp. with petrol and then with CH_2Cl_2 and finally with EtOH–H_2O (1:1). This last extract was concn and a crystalline solid was obtained (200 mg), recrystallized in H_2O and chromatographed in PC (Whatman 3MM). R_f's (× 100) were 78 in H_2O, 12 in TBA, 72 in 15% HOAc and 47 in BAW. Mp (hot stage) 240° (dec.). UV spectral max. in MeOH at 253 (log ε 4.35) and 353 nm (log ε 4.28) with bathochromic shift in the presence of NaOMe (+ 63 nm) and $AlCl_3$ (+ 48 nm). IR (KBr), ν_{max} cm^{-1}: 3350 (HO), 1640 (CO), 1250 and 1040 (SO). NMR (D_2O, 60 MHz) δ 3.6 (3H, *s*, OMe, C3'); 6.5 (2H, *d*, $J_{6,8-8,6} = 2.5$ Hz, C6-C8; 6.7 (1H, *d*, $J_{5'-6'} = 10$ Hz, C5'); 7.20 (1H, *d*, $J_{2',6'} = 2.5$ Hz, C6') and 7.30 (1H, *d*, $J_{6',2'} \simeq 2$ Hz, C2'). Analysis: Found: S: 11.59%, Calc. for $C_{16}H_{10}O_{13}S_2K_2$, S: 11.60%.

Acid hydrolysis gave isorhamnetin, identified by its spectral properties in UV, IR and chromatography against an authentic sample. The hydrolysate also gave a white ppt. with $BaCl_2$. Test for carbohydrates were negative. On demethylation [3] the reaction product gave quercetin, identified by usual techniques. 60 mg of 3,7-disulphate were methylated [1], the product hydrolyzed and its observed UV properties were those of quercetin 5,3',4'-trimethyl ether. Alkaline degradation of this [4] gave veratric acid among other products.

Partial hydrolysis was carried out with 0.05 N HCl [5], the soln being chromatographed in water. Four spots were detected eluted and analyzed by UV. The first R_f 0.00 was identified as isorhamnetin; the second at 0.12 was identified as isorhamnetin-7-sulphate [6], the third with R_f 0.65 was identical to persicarin [7], and the fourth at R_f 0.78 was unchanged 3,7-disulphate.

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ANTHOCYANINS OF *FUCHSIA* (ONAGRACEAE)

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Abstract—3-Glucosides and 3,5-diglucosides of pelargonidin, cyanidin, peonidin, delphinidin, petunidin and malvidin have been identified as flower pigments in *Fuchsia* species. These pigments in varying admixture appear to be solely responsible for different flower colours in this genus. Their production and inheritance seems to be under a complex system of genetic control.

In spite of the considerable ornamental value of the genus *Fuchsia*, little work has been devoted to the identification of the pigments responsible for the wide range of flower colours present. Only three pigments