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EUPHORBIACEAE

BERGENIN IN *FLUEGGEA MICROCARPA*

S. A AHMAD, S K KAPOOR and ASIF ZAMAN
Department of Research in Unani Medicine, A K Tibbiya College, A M U , Aligarh, India

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Plant. Flueggea microcarpa Bl *Source* In Kashmir ascending up to 5000 ft *Uses* Medicinal [1] *Previous work.* None

Leaves. Extracted with ethanol, concentrated and gummy solid crystallized from acetone m p. 130–135°. *Bergenin.* $C_{14}H_{16}O_9$ H_2O (m p 130–135°) (hydrate), m p , mixed m.p 236–238° (anhydrous) (lit m p 238°),[2] *m/e* 328 M^+ (40%); other major peaks at 208 (100%), 180 (12%), 179 (14%), 151 (12%) and 61 (20%) Found. C, 49 83%, H, 5·06% required for $C_{14}H_{16}O_9$ C, 49 8% H, 5 1%, Pentaacetylbergenin $C_{14}H_{11}O_4$ $(OAc)_5$ (m p 195–196°) (lit m p 196–198°), Found C, 53·3%, H, 4 84%, required for $C_{14}H_{11}O_4$ $(OAc)_5$ C, 53 5%, H, 4 9% Di-*O*-methylbergenin $C_{16}H_{20}O_9$ (m p 194–198°) (lit m p. 194°)[2] Di-*O*-methyl acetate $C_{19}H_{26}O_9$ (m p 132°) (lit m p 130°)[2,3]

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[1] CHOPRA and NAYYAR, *Glossary of Indian Medicinal Plants*, p 199, CSIR, New Delhi (1956)
[2] B M DEAN and J WALKER, *J Chem Ind* 1696 (1958)
[3] J EVELYN HAY and L J HAYNES, *J Chem Soc* 2231 (1958)

Key Word Index—Flueggea microcarpa, Euphorbiaceae, isocoumarin, bergenin

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LABIATAE

FLAVONOIDS OF THE LEAVES OF *MENTHA SPICATA* AND *ANISOCHILUS CARNOSUS*

S SANKARA SUBRAMANIAN and A G R NAIR
Department of Chemistry, Jawaharlal Institute of Postgraduate Medical Education and Research, Pondicherry-6, India

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Plant Mentha spicata L [1] *Uses* Medicinal, nutritional [1] *Previous work* Flavonoids of sister species [2]

[1] *Wealth of India, Raw Materials*, Vol VI, p 344, C S I R , New Delhi (1962)
[2] S HATTORI, in *The Chemistry of Flavonoid Compounds* (edited by T A GEISSMAN), p 325, Pergamon Press, Oxford (1962)

Present work. Extraction of fresh leaves with hot 80% alcohol and fractionation into, (a) petrol (40–60°), (b) ether, (c) EtOAc, and (d) aq. mother liquor.

Diosmetin (4′-methyl-luteolin). (Ether fraction, R_f, m.p. and mixed m.p., λ_{max}, triaceate, m p. and mixed m.p , co-PC). *Diosmin (diosmetin-7-rhamnoglucoside).* (EtOAc fraction and aq. mother liquor after addition of Me_2CO), m p. 270–272° (dec), λ_{max} 253, 267, 334, R_f, acetate, m.p. 210° (earlier sintering at 125°), hydrolysis (10% H_2SO_4–HOAc = 1 1 refluxing for 5 hr) yielded diosmetin, glucose and rhamnose; partial hydrolysis (N.HCl, 100°, 5 min) yielded diosmetin-7-glucoside and rhamnose. *Diosmetin-7-glucoside.* (EtOAc and aq. mother liquor after addition of Me_2CO), m.p. 257–258° (dec.), R_f, hydrolysis (HOAc medium) yielded diosmetin and glucose, no separation on co-chromatography with diosmetin-7-glucoside obtained by partial hydrolysis of diosmin.

TABLE 1 R_f OF THE FLAVONOIDS OF *Mentha spicata*

Compound	R_f (28°)						
	H_2O	15% HOAc	30% HOAc	60% HOAc	BAW	Forestal	H_2O-satd phenol
Diosmetin	0 00	0 07	0 22	0 58	0 90	0 81	0 92
Diosmin	0 13	0 32	0 53	0 72	0 38	0 80	0 48
Diosmetin-7-glucoside	0 03	0 17	0 34	0 58	0 42	0 71	0 67

Plant. Anisochilus carnosus Wall.[3] *Uses.* Medicinal.[3] *Previous work.* None on flavonoids. *Present work.* Leaves. Extraction and fractionation as under *M spicata*

Luteolin and apigenin (traces). (Ether fraction—R_f, co-chromatography with authentic samples). *Luteolin-7-glucoside and apigenin-7-glucoside.* (EtOAc fraction—R_f, acid hydrolysis and co-chromatography). Luteolin-7-glucuronide and apigenin-7-glucuronide (EtOAc extract of the aq. mother liquor after acidification with dil. H_2SO_4) (R_f, solubility characteristics, resistance to hydrolysis with 7% H_2SO_4, hydrolysis with 10% H_2SO_4 in HOAc medium 5 hr and by β-glucuronidase to yield the aglycones and glucuronic acid, direct comparison and co-chromatography).

[3] *Wealth of India, Raw Materials*, Vol I, p 79, C S I R , New Delhi (1948)

Key Word Index—Anisochilus carnosus, Mentha spicata, Labiatae, flavones, diosmetin, luteolin, apigenin

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IDENTIFICATION OF 5,9-DEHYDRONEPETALACTONE, A NEW MONOTERPENE FROM *NEPETA CATARIA**

S. D. SASTRY, W R. SPRINGSTUBE and G. R. WALLER

Department of Biochemistry, Agricultural Experiment Station, Oklahoma State University, Stillwater, Oklahoma 74074, U S A

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