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SHORT COMMUNICATION

DISTRIBUTION OF MEARNSITRIN IN *ACACIA* POPULATIONS

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Abstract—The distribution of mearnsitrin (4′-methylmyricitrin) in populations of *Acacia mearnsii* of different provenance, and in related species, is described.

A NEW compound was reported by Zeijlemaker and MacKenzie[1] as occurring in the leaves of about 8 per cent of black wattle trees (*Acacia mearnsii* De Wild. syn. *A. decurrens* (Wendl) Willd. var. *mollis* Lindl., previously incorrectly described as *A. mollissima* Willd.) grown from commercial seed. This compound was identified as the 3-rhamnoside of 4′-methylmyricetin and named mearnsitrin.[2] It is distinguished chromatographically from myricitrin and quercitrin in u.v. light as a dark purple to brown spot, which does not change in colour when fumed with ammonia. Although quantitative variation occurs as indicated by the length of the spot on paper, the presence of the compound is always easily recognized. Mearnsitrin does not react with ammoniacal silver nitrate, but gives a brick-red colour at first with diazotized benzidine, the colour fading later to orange–brown.

Although the inheritance of mearnsitrin is controlled by a single dominant gene,[1] homozygous plants have not been found and, moreover, the compound occurs in the leaves of only a small proportion of the population in commercial stands. In an attempt to throw further light on the reason for this low level of expression of a dominant character, the occurrence of mearnsitrin in several populations of black wattle of different provenances from Continental Australia and Tasmania and one from Natal in South Africa was investigated. For purposes of comparison, material from five other species of the *decurrens* group of bipinnate acacias was also checked for the presence of this compound. The results of these investigations are shown in Table 1.

The percentage of individuals containing mearnsitrin in populations of black wattle from Natal in South Africa, from Cooma and Stawell in Continental Australia, and from East Tamar in Tasmania ranged from 7 to 10, but two samples collected from the vicinity of Nowra in New South Wales had respectively 55 and 71 per cent of trees containing mearnsitrin. Since there were no obvious morphological differences between these various populations, the chemical difference reflected by the markedly greater frequency of occurrence of mearnsitrin in the Nowra populations is difficult to explain.

Mearnsitrin was not found in any of the *A. decurrens* (Green wattle) or *A. baileyana* trees examined and it was present in only a very small percentage of trees of *A. irrorata* and

[1] F. C. J. ZEIJLEMAKER and A. M. MACKENZIE, *Report Wattle Research Institute for* 1965–1966, p. 57.
[2] A. M. MACKENZIE, *Tetrahedron Letters* **26**, 2519 (1967).

A. sylvestris, but 40 per cent of the *A. dealbata* (Silver wattle) population examined contained mearnsitrin. This result suggests the possibility of utilizing the presence of a compound such as mearnsitrin as a diagnostic character in the elucidation of species relationships within this complex group of the genus *Acacia*.

TABLE 1. THE OCCURRENCE OF MEARNSITRIN IN DIFFERENT POPULATIONS OF *A. mearnsii* AND IN OTHER SPECIES OF THE *decurrens* GROUP OF BIPINNATE ACACIAS

Species	Seed provenance	Year collected	% Germination	Mearnsitrin: Number of trees tested +	Mearnsitrin: Number of trees tested −	Mearnsitrin: Per cent
Acacia mearnsii De Wild.	Natal, South Africa	—	90	6	66	8
Acacia mearnsii De Wild.	Nowra, N.S.W., Australia	1948	53	41	34	55
Acacia mearnsii De Wild.	Nowra, N.S.W., Australia	1967	84	104	42	71
Acacia mearnsii De Wild.	Cooma, N.S.W., Australia	1963	92	8	71	10
Acacia mearnsii De Wild.	Stawell, Victoria, Australia	—	93	6	81	7
Acacia mearnsii De Wild.	E. Tamar, Tasmania	1949	55	8	72	10
A. decurrens Willd.	Natal, South Africa	1952	90	0	71	0
A. irrorata Sieber	Natal, South Africa	1956	78	1	56	2
A. sylvestris Tindale	N.S.W., Australia	1956	85	1	69	1
A. baileyana F. v. M.	Natal, South Africa	—	58	0	43	0
A. dealbata Link.	Natal, South Africa	1959	53	36	44	40

EXPERIMENTAL

Seedlings were raised from the available seed, and 3–4 g of leaves from each plant were ground with ethyl acetate in routine tests. The liquid fraction was brought to dryness, dissolved in water, and purified with petroleum ether (b.p. 30–60°). The water layer was brought to dryness and dissolved in 1 ml of methanol. Two-dimensional ascending chromatograms on Whatman No. 1 paper were developed with *n*-butanol–acetic acid–water (6:1:2) and 2% acetic acid.[3,4]

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[3] E. C. BATE-SMITH, *Nature* **161**, 835 (1948).
[4] R. A. CARTWRIGHT and E. A. H. ROBERTS, *Chem. & Ind.* 1389 (1954).