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FLAVONOIDS OF *PARIETARIA OFFICINALIS*

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The genus *Parietaria* (Urticaceae) comprises six species of which *Parietaria officinalis* L. is a medicinal plant (1,2). Previous chemical investigations indicated the presence of kaempferol-3-bioside and other unidentified flavonoids (3). This work is the first detailed report of flavonoids in the genus *Parietaria*.

The leaves and flowers of *P. officinalis* yielded ten flavonoids: the 3-glucosides and 3-rutinosides of quercetin, kaempferol and isorhamnetin, 3-sophorosides of quercetin and kaempferol, and 3-neohesperidosides of kaempferol and isorhamnetin.

## EXPERIMENTAL

**PLANT MATERIAL.**—Flowering plants were collected in Poznań district, Poland. Voucher specimens are deposited at our department.

**EXTRACTION AND ISOLATION.**—Air-dried leaves and flowers (1000 g) were extracted five times with MeOH. Extracts were concentrated under reduced pressure, and the residue (145 g) was dispersed in hot H<sub>2</sub>O. The H<sub>2</sub>O-soluble portion was extracted with *n*-hexane, CHCl<sub>3</sub>, Et<sub>2</sub>O, EtOAc, and *n*-BuOH, successively. The two latter flavonoid-containing fractions (2.3 g and 8.0 g, respectively) were combined and chromatographed over a polyamide SC-6 column (100 g, 5×28.5 cm) with H<sub>2</sub>O followed by an EtOH-H<sub>2</sub>O gradient. Three fractions obtained were further separated on preparative polyamide 6D plates (20×20 cm) with CHCl<sub>3</sub>-MeOH-methyl ethyl ketone, 9:4:2 (run twice). Bands were eluted with MeOH, and all individual compounds were finally purified over small Sephadex LH-20 columns in pure MeOH. Yields were low: 64 mg for quercetin-3-rutinoside, 20 mg for quercetin-3-sophoroside, 16 mg for isorhamnetin-3-neohesperidoside, and below 5 mg for the remaining compounds.

**IDENTIFICATION OF THE FLAVONOIDS.**—Flavonoids were identified by partial and total acidic hydrolysis, enzymatic hydrolysis, H<sub>2</sub>O<sub>2</sub> oxidation, uv and <sup>1</sup>H-nmr spectroscopy (4,5), analysis of methylated sugars obtained from permethylated compounds, and tlc comparisons with authentic samples when available. Uv spectra were taken on a uv-Vis Specord (Zeiss, Jena) and <sup>1</sup>H-nmr spectra were recorded on a JEOL FX 90 Q.

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THE CHEMICAL CONSTITUENTS OF *MUSANGA CECROPIOIDES*

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We wish to report the isolation, for the first time, of tormentic acid, 2-acetyl tormentic acid, 3-acetyl tormentic acid, and euscaphic acid, as their methyl esters, from the rootwood of *Musanga cecropioides* R. Br. (Urticaceae). These triterpene acids were previously isolated from *Myrianthus arboreus* P. Beauv (1,2). The two genera, *Musanga* and *Myrianthus*, which were formerly classified as members of the Moraceae (3,4), are now placed in the family Urticaceae because both genera lack latex (5). The presence of the same triterpene acids in both genera may be taxonomically significant.

## EXPERIMENTAL

**PLANT MATERIAL.**—*M. cecropioides* was collected from the bank of the New Calabar River near the University of Port Harcourt, Choba, Nigeria. Voucher specimens are deposited at the Herbarium of the Faculty of Science, University of Port Harcourt, Nigeria.

**EXTRACTION AND ISOLATION.**—The rootwood (15 kg) of *M. cecropioides* was crushed and successively extracted with hexane,  $\text{CHCl}_3$ , and EtOH. The EtOH extract (58 g) was redissolved in 10% aqueous MeOH and precipitated with dilute HCl. The precipitate (42 g) was methylated ( $\text{CH}_2\text{N}_2$ ), and the crude methyl ester (43 g) was chromatographed on a silica gel (1.2 kg) column eluted with  $\text{Et}_2\text{O}$  in petroleum ether. Mixtures of 40%, 50%, 60%, and 70%  $\text{Et}_2\text{O}$  in petroleum ether eluted 2-acetyl methyl tormentate, 3-acetyl methyl tormentate, methyl euscaphate, and methyl tormentate, respectively. These compounds were identified from their mp, ir, ms, and nmr and by direct chromatographic comparison with authentic samples isolated from *Myrianthus arboreus* (1,2).

Full details of the isolation, mps, spectral data, and identification of the compounds are available on request to the authors.

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