

Plant. *Asclepia linaria* Cav. (Venenillo). Voucher specimen No. 7222. *Source:* Zacatecas, Mex. March 1973. *Previous work:* only on sister species.^{6,7} *Uses:* Medicinal.⁸

Present work. The aerial part (1350 g), was dried, powdered and extracted with petrol. The extract (45.2 g) was separated into individual constituents by a combination of column chromatography and preparative TLC (silica gel G hexane-C₆H₆, 7:3) and the following compounds were identified by direct comparison of each one with authentic samples (m.m.p., coTLC, and their { α }, MS, IR and NMR spectra). Triacontane, ψ -taraxasteryl acetate sitosterol and oleanolic acid. The roots (2300 g) on similar procedure provided 64 g of light petrol extract from which ψ -taraxasteryl acetate and oleanolic acid were separated and identified.

Comment. Cardiac glycosides and alkaloids were not found in a direct ethanolic extract of aerial and roots material.

Acknowledgements—Morris Kupchan and Ernest Eliel, for MS and to CONACYT for the research grant 015.

⁶ HEGNAUER, R. (1964) *Chemotaxonomie der Pflanzen*. Vol. 3, p. 198., Birkhauser, Basel.

⁷ DOMÍNGUEZ, X. A. and VENEGAS, M. (1972) *Phytochemistry* **11**, 848.

⁸ MARTÍNEZ, M. (1959) *Plantas Medicinales de México*, 4^a edn, p. 239., Editorial Botas, México.

Phytochemistry, 1974, Vol. 13, pp. 2618 to 2619. Pergamon Press. Printed in England.

FLAVONOID COMPOUNDS FROM *ALNUS VIRIDIS*

ECKHARD WOLLENWEBER

Fachbereich Biologie, Botanik, Technische Hochschule, D 61 Darmstadt

MAURICE JAY and JEAN FAVRE-BONVIN

Département de Biologie Végétale, Service de Phytochimie, Université Claude Bernard Lyon I, F 69621 Villeurbanne

(Received 8 April 1974)

Key Word Index —*Alnus viridis*; Betulaceae; flavonoids; 2',4'-dihydroxy-6'-methoxychalcone; galangin; galangin 3-methyl ether.

Plant. *Alnus viridis* DC. *Source.* Jura mountains, near Grenoble, France. *Part of plant.* Winter buds. *Previous work.* Fine structure of bud glands;¹ flavonoid excretion in *Alnus glutinosa*.²

Present work. Buds of *Alnus viridis*, which are covered with a whitish scurf of terpenoid material,³ were extracted with acetone at room temperature. Three flavonoids were isolated by chromatography on columns of silica gel and polyamide with C₆H₆ and increasing quantities of EtOAc and MeOH. Compounds **1** and **2** separated only when crystallized from EtOH. TLC comparisons were on silica gel (solvent A, C₆H₆–Me₂CO, 9:1) and polyamide (solvent B, C₆H₆–petrol–EtOAc–MeOH, 60:26:7:7).

* Aminoethylester of boric acid.

¹ WOLLENWEBER, E., EGGER, K. and SCHNEPE, E. (1971) *BPP* **162**, 193.

² WOLLENWEBER, E., BOUILLANT, M.-L., LEBRETON, P. and EGGER, K. (1971) *Z. Naturforsch.* **26b**, 1188.

³ WOLLENWEBER, E. (1974) *Z. Naturforsch.* **29c**, in Press.

Compound 1. 2',4'-dihydroxy-6'-methoxychalcone. R_f 0.48 (A), 0.47 (B). Dark spot on polyamide, no reaction with "Naturstoffreagenz A". Mp 188°. UV (EtOH) λ_{\max} 345 nm, with AlCl_3 shift to 362 nm, with NaOEt shift to 394 nm. MS: m/e 270 (M^+ , 80%), 269 (60), 242 (6), 193 (100), 167 (36), 166 (20), 103 (14), 77 (16). NMR (trimethylsilyl derivative in CCl_4): $-\text{OCH}_3$ (s, 3.70 δ), $-(\text{Ar})\text{H}$ (d, 5.85 δ ; J 2.5 Hz), $-(\text{Ar})\text{H}$ (d, 5.98 δ , J 2.5 Hz), $-\text{H}$ (d, 6.79 δ , J 17 Hz), 6 H (m, 7.2–7.6 δ).

Compound 2. Galangin 3-methyl ether. R_f 0.59 (A), 0.51 (B). Dark spot on polyamide, light brown with Naturstoffreagenz. M.p. 297°. UV λ_{\max} (345, sh), 268 nm, with AlCl_3 397, 332, 279 and 252 nm, MS m/e 284 (M^+ , 100%), 283 (85), 269 (4), 266 (10), 255 (6), 253 (8), 241 (6), 207 (2), 193 (4), 171 (6), 153 (6), 152 (6), 105 (10), 77 (15). NMR (trimethylsilyl derivative in CCl_4): $-\text{OMe}$ (s, 3.80 δ), $-\text{H}$ (d, 6.11 δ , J 2.5 Hz), $-\text{H}$ (d, 6.45 δ , J 2.5 Hz), 3 H (m, 7.43 δ), 2 H (m, 8.05 δ).

Compound 3. Galangin R_f 0.46 (A), 0.21 (B). Orange–yellow spot on polyamide, greenish yellow with Naturstoffreagenz. M.p. 220°. UV λ_{\max} 362 and 268 nm, with AlCl_3 419, 338, 275 and 251 nm.

Galangin and its 3-methyl ether have also been found together recently in buds of *Populus nigra*.⁴ The chalcone I was first isolated from roots of a New Guinea *Piper* sp. (alpinetinchalkon),⁵ and later from seeds of *Alpinia katsumadai* (cardamonin)⁶ and *A. specios*.⁷ The flavonoids found in bud excretion (and on male flowers) of *Alnus viridis* (I–III) are completely different from those described earlier from *A. glutinosa*² and other species still under investigation. In 14 species of *Alnus* and 25 species of *Betula*, I is the only chalcone encountered.

Acknowledgement—Thanks are due to Prof. K. Egger, Heidelberg, for collecting the bud material.

⁴ WOLLENWEBER, E. und EGGER, K. (1971) *Phytochemistry* **10**, 225.

⁵ SAUER, H. V. and HÄNSEL, R. (1967) *Planta Medica* **15**, 443.

⁶ KIMURA, Y., TAKAHASHI, S. and YOSHIDA, I. (1968) *Yakugaku Zasshi* **88**, 329.

⁷ KRISHNA, B. M. and CHAGANTY, R. B. (1973) *Phytochemistry* **12**, 238.

BIFLAVONES FROM *MANIHOT UTILISSIMA*

MOHD. KAMIL, MOHD. ILYAS, WASIUR RAHMAN, MASAYOSHI OKIGAWA
and NOBUSUKE KAWANO

Department of Chemistry, Aligarh Muslim University, Aligarh, India and Faculty of Pharmaceutical Sciences,
Nagasaki University, Nagasaki, Japan

(Received 11 April 1974)

Key Word Index—*Manihot utilissima*; Euphorbiaceae; biflavones; amentoflavone; podocarpusflavone A.

Plant. *Manihot utilissima*. Pohl (*M. esculenta* Crantz) (Euphorbiaceae) *Source.* Collected at Aleem Nursery, Aligarh Muslim University, Aligarh, India.