Phytochemistry, 1972, Vol. 11, p. 2115. Pergamon Press. Printed in England.

RHIZOME CONSTITUENTS OF *TUSSILAGO FARFARA*

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(*Received* 11 *January* 1972)

The air dried rhizomes of *Tussilago farfara* were extracted with boiling petrol (b.p. 60–80°). The concentrated extract was column chromatographed on alumina and developed with petrol. A colourless elute, on concentration, furnished a wax (0·5 %) which was judged (IR) to be mainly hydrocarbon and was found (GLC) to be a mixture of branch-chained hydrocarbons ranging from C_{15} to C_{31} with C_{17} component predominating (51 %).

Further elution with EtOAc–light petroleum (1:1) yielded a second fraction, which on concentration and recrystallization from MeOH furnished a colourless solid (0·2 %), m.p. 204°. The MS of this revealed a molecular ion peak at *m/e* 426 (40 %), having a cracking pattern with intense peaks at *m/e* 247 (base) and *m/e* 229 (68 %), which compared favourably with the MS of an authentic sample of bauerenol. Comparison of the solid (NMR and mixed TLC) with an authentic sample established the identity of the extract as being bauerenol.

The residue from the petroleum extraction was further extracted with boiling MeOH. The concentrate was shown (TLC) to be mainly glucose and maltose.

Acknowledgements—The author is indebted to: Shell Research Ltd. for performing gas chromatography; Associated Electrical Industries for effecting mass spectrometry; Professor F. N. Lahey (University of Queensland) for supplying a sample of bauerenol.

Key Word Index—*Tussilago farfara*; Compositae; sterols; bauernol; hydrocarbons.

Phytochemistry, 1972, Vol. 11, pp. 2115 to 2116. Pergamon Press. Printed in England.

LABIATAE

SIDERIN, A NEW COUMARIN FROM *SIDERITIS CANARIENSIS**

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(*Received* 6 *January* 1972)

In previous papers[2,3] we reported the isolation of diterpenoid compounds from *Sideritis Canariensis* Ait. (Labiatae). Continuing our investigation on this species we obtained a new coumarin which we call siderin (I). The spectroscopic behaviour of siderin (I), $C_{12}H_{12}O_4$

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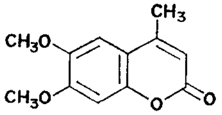
* Part XXIII in the series "New Sources of Natural Coumarins". For Part XXII see Ref. 1.

[1] A. G. GONZÁLEZ, H. LÓPEZ DORTA, M. MELIÁN RODRÍGUEZ and F. RODRÍGUEZ LUIS, *Anal. Quim.* in press.

[2] A. G. GONZÁLEZ, J. L. BRETÓN, B. M. FRAGA and J. G. LUIS, *Tetrahedron Letters* 3097 (1971).

[3] A. G. GONZÁLEZ, J. L. BRETÓN, B. M. FRAGA and J. G. LUIS, *Anal. Quim.* 67, 1245 (1971).

(M^+ 220), m.p. 196–197° (MeOH), is in accord with the proposed structure. In the IR (KBr) it presents the typical absorptions of coumarins at 1715, 1600 and 815 cm^{-1}, and in the UV (EtOH) at λ_{max} 235, 290 and 314 nm. The NMR spectrum shows singlets at 3·24 τ (2H, $W_{\frac{1}{2}} = 6$ Hz; aromatic protons), 4·36 (1H; H–C_3), 6·02 and 6·12 (3H each; MeO–C_6, MeO–C_7) and at 7·35 τ (3H; Me–C_4). The position of the signals for the aromatic protons and the methoxyl groups agrees with that of the 6,7-dimethoxy-coumarins.[4] On the other hand, the peaks which correspond to the H–C_3 and Me–C_4 are similar to those found for 8-methoxy-4-methyl-coumarin.[5] The MS, besides the molecular ion at m/e 220, has prominent peaks at m/e 205 (M^+–Me), 192 (M^+–CO), 177 (M^+–Me–CO), 162 (M^+–2 Me–CO), 149 (M^+–Me–2 CO), 134 (M^+–2 Me–2 CO) and 106 (M^+–2 Me–3 CO).


(I)

From the same species we also isolated a lignan of m.p. 121–123° (MeOH), $[\alpha]_D$ +72° ($CHCl_3$), NMR spectrum ($CDCl_3$): 3·08 τ (d, 6H; aromatic protons), 4·00 (s, 4H; 2 —OCH_2O—), 5·20 [d, 2H, $J = 5$ Hz; 2 —OCH(Ar)—CH<], 5·80 and 6·15 (each dd and 2H; 2 >CH—CH_2—O), and 6·90 τ (m, 2H; >CH—CH<), which by its physical and spectroscopic data was identified as (+)-sesamin.[6] To our knowledge, *Sideritis canariensis* Ait. is the first Labiata from which a lignan has been isolated; moreover, the presence of coumarins is very rare in this family.

Acknowledgements—The authors thank Dr. C. Pascual, Physikalisch-chemisches Institut, Universität Basel, for the mass spectrum and Dr. R. Estévez for his helpful hints. This study was performed within the Programme concerted with the Ministerio de Educación y Ciencia.

[4] W. STECK, B. K. BAILEY, J. P. SHYLUK and O. L. GAMBORG, *Phytochem.* **10**, 191 (1971).
[5] C. W. L. BEVAN and D. E. U. EKONG, *Chem. & Ind.* 383 (1965).
[6] W. KARRER. *Konstitution und Vorkommen der organischen Pflanzenstoffe*, p. 463, Birkhäuser Verlag, Basel (1958).

Key Word Index—*Sideritis canariensis*; Labiatae; coumarin; 6,7-dimethoxy-4-methylcoumarin; lignan; sesamin.

Phytochemistry, 1972, Vol. 11, pp. 2116 to 2117. Pergamon Press. Printed in England.

LECYTHIDACEAE

STEROLS FROM *CAREYA ARBOREA*

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(*Received* 11 *January* 1972)

Plant. Careya arborea Roxb. *Uses.* Medicinal.[1] *Previous work.* On seeds,[2,3] stem bark[4] and leaves.[5]

[1] Council of Scientific & Industrial Research, in *The Wealth of India*, Vol. II, p. 76, Delhi (1950).
[2] J. GEDEON and F. A. KINCL, *Arch. Pharm.* **289**, 162 (1956).
[3] J. GEDEON and F. A. KINCL, *Arch. Pharm.* **290**, 578 (1957).
[4] L. R. ROW and C. S. P. SASTRY, *Indian J. Chem.* **2**, 510 (1964).
[5] S. B. MAHATO, S. K. BANERJEE and R. N. CHAKRAVARTI, *Bull. Calcutta School Trop. Med.* **15**, 8 (1967).