ponderance in the more phylogenetically advanced dicotyledons and its absence in species belonging to four monocotyledonous families [4]. In contrast to a previous report [4], the content of 6-hydroxykynurenic acid was high in inflorescence and fruits and was not detected in leaf and root tissue. Neither the metabolic role nor the biosynthetic pathway for 6-hydroxykynurenic acid, a typical product of the mammalian, avian and bacterial tryptophan catabolism, have been fully clarified in higher plants [5].

EXPERIMENTAL

Powdered air-dried fruits (400 g) and homogenized inflorescences (1200 g, fr. wt) collected in July were extracted 3× MeOH at room temp. Filtrates were concentrated, and the residues continuously extracted overnight with Et_2O. Concentrated extracts were chromatographed on Whatman 3MM paper with *n*-BuOH–C_6H_6–C_5H_5N–H_2O (10:2:6:3). The band fluorescing pink in UV (R_f 0·19) was eluted with warm MeOH and re-chromatographed on Si gel TLC plates with *n*-BuOH–C_5H_5N–H_2O (14:3:3) (R_f 0·68). The compound was identified with authentic material by PC and TLC using several solvent systems, and by UV-spectroscopy (neutral, alkaline and acidic media) and fluorimetry. Methylation overnight with CH_2N_2 gave the blue fluorescent dimethyl derivative whose identity with an authentic sample was confirmed by PC, TLC and UV.

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NEW CHROMONES FROM *PEUCEDANUM OSTHRUTHIUM**

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Key Word Index—*Peucedanum osthruthium*; Umbelliferae; chromones; peucenin; peucenin-7-methyl ether; hamaudol acetate.

Plant. Peucedanum osthruthium (L.) Koch (syn. *Imperatoria osthruthium* L.) Umbelliferae roots collected in South Tyrol (Italy).† *Uses.* Medicinal—Radix Imperatoriae [1]. *Previous work*—see previous papers [2, 3].

Present work. Dried roots (440 g) were extracted with C_6H_6. The residue from the C_6H_6 extract was chromatographed over a Si gel column and afforded, beside several coumarins and peucenin [2], fractions containing peucenin-type compounds (violet colour reaction with $FeCl_3$, yellow coloration with conc. H_2SO_4). Further purification on Si gel preparative layers (System: C_6H_6–EtOAc 9:1) afforded three crystalline products: peucenin (**1**) mp 209–212°, (lit. 210–211° [4]), peucenin-7-*O*-methyl ether (**2**)—osthol mixture, mp 106–109°, and a third chromone, mp 134–135°, to which structure **3** can be attributed on the basis of spectral data.

The identification of the peucenin-7-*O*-methyl ether was based upon the polarity, UV-, IR- and

* Part 49 in the series "Natural Product Chemistry", for Part 48 see Reisch, J., Rozsá, Zs., Szendrei, K. and Körösi, J. (1974) *Phytochemistry* (in press).

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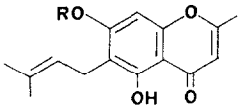
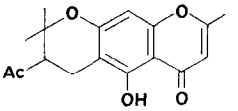
the MS of its mixture with osthol. The identity was proved by direct comparison with authentic material.



(1) R = H
(2) R = Me



(3)

Compound **3** is optically active $[\alpha]_{\lambda nm}^{30°}$ −34·1° (589), −31·6° (578), −34·1° (546), −49·4° (436) and −55·7° (405) (*c* 0·79) and has a molecular weight of 318 (from mass spectrum), $C_{17}H_{18}O_6$. Its UV-spectrum, especially the high intensity of the band at 258 nm characterizes it as a chromone derivative [5]. $\lambda_{(max)}^{MeOH}$ 250 sh, 258, 268 sh, 294 nm, log ε 4·35, 4·33, 4·20, 3·95). In its IR spectrum two –C=O bands are present at 1750 and 1670 cm^{-1}. The latter is due to the conjugated chromone carbonyl group, the former can be attributed to an ester C=O group on the non-chromone part of the molecule. NMR ($CDCl_3$, TMS as internal reference δ ppm) 1·4 (6H, *s*, 2 Me at C-8), 2·1 (3H, *s*, MeCOO at C-7), 2·4 (3H, *s*, Me at C-2), 2·9 (2H, *m*, CH_2 at C-6), 5·2 (1H, *m*, CH at C-7), 6·05 (1H, *s*, CH= at C-3), 6·4 (1H, *s*, H at C-10) and 13·0 (1H, *s*, O–H . . O= at C-5). MS: M^+ (6%), 258 (22%), M-60), (100%, M-60-15). The parent alcohol hamaudol was isolated by Nitta [6] from roots of *Angelica japonica*. An ester described as hamaudol-7-*O*-acetate having a mp 127–128° was isolated from *Xanthogalum sachokianum* by Sokolova and Pimenov [7, 8] and its spectroscopic properties are comparable to those described above.

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ELLAGIC ACIDS FROM VOCHYSIACEAE*

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Key Word Index—*Erisma calcaratum*; *Salvertia convallariodora*; *Vochysia acuminata*; *V. tyrsoidea*; Vochysiaceae; ellagic acids.

The Vochysiaceae include only five south American genera, namely *Callisthene*, *Erisma*, *Qualea*, *Salvertia* and *Vochysia*. Ellagic acids were found in *E. calcaratum* (Link) Warm. (**1b**, **1c**), *S. convallariodora* St. Hil. (**1b**, **1d**, **1e**, **1f**), *V. acuminata* Bongard (**1a**, **1b**) and *V. tyrsoidea* Pohl (**1b**, **1d**). The last named species contains additionally physcion and 2,6-dimethoxy-1,4-benzoquinone. These and the ellagic acids of known natural occurrence **1a**, **1b**, **1d** were identified by comparison of their physical and spectral data with published data, preparation of derivatives and interconversions. 3,3',4-Tri-*O*-methyl-4'-*O*-rutinosylellagic acid (**1c**) was hydrolyzed to rhamnose, glucose and **1b**. The PMR spectrum of its hexaacetate contained the characteristic signals of the hexa-*O*-acetylrutinosyl group [1]. A product, isolated in small amount, was shown by MS to be an *O*-methyl-*O*,*O*-methyli-

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