Thus, depending on the phases of ripeness of the fruit the amount of 18:1 acid in the neutral lipids of both varieties rises, reaching its greatest value at the end of ripening, while, conversely, the amount of the 18:3 acid decreases. Variety differences have practically no effect on the amount and qualitative composition of the fatty acids.

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COUMARINS OF SOME SPECIES OF THE GENUS *Heracleum*

N. F. Komissarenko and G. F. Fedorin

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The presence of coumarins in *Heracleum asperum* Bieb., *H. moellendorffii* Hance, *H. ponticum* (Lipsky) Schischk. ex Grossh., *H. sphondyllum* L. (hogweed cow parsnip) and *H. woroschilowii* Gorovoi, has been shown previously by paper chromatography [1].

In the present communication we compare the results of a study of the coumarins of the fruit of the above-mentioned species and of the quantitative determination of the total amount of furocoumarins and individual substances in them with the aim of finding promising raw materials sources for obtaining them as pharmacologically active compounds.

The isolation of the furocoumarins and their identification were carried out as described previously [2-5]. Quantitative determinations were carried out as in [6].

We isolated 10 substances from each species of the cow parsnip investigated: phellopterin — $C_{17}H_{16}O_5$, mp 100-102°C; biac-angelicin — $C_{17}H_{18}O_7 \cdot H_2O$, mp 117-118°C, $[\alpha]_D^{18}$ + 24° (s, 0.6; ethanol); isopimpinellin — $C_{13}H_{10}O_5$, mp 148-154°C (decomp.) imperatorin — $C_{16}H_{14}O_4$, mp 102-103°C; xanthotoxin — $C_{12}H_8O_4$, mp 145-146°C; bergapten — $C_{12}H_8O_4$, mp 189-190°C; heracle — col — $C_{17}H_{18}O_7$, mp 117-118°C, $[\alpha]_C^{20}$ + 30° (s 0.5; methanol); pimpernellin — $C_{13}H_{10}O_5$, mp 116-117°C; and isobergapten — $C_{12}H_8O_4$, mp 223-224°C.

Determination of the total amount and the amounts of the individual furocoumarins in the fruit of the species investigated gave the following results (%):

Heracelum	Total	Bergapten	Xantho-toxin	Isopimper-nellin
Woroschilowii	2,85	0,41	0,36	0,57
Asperum	1,36	0,27	0,12	0,41
Moellendorffii	1,68	0,18	0,17	0,18
Sphondylium	0,95	0,32	0,15	0,17
Ponticum	1,51	0,24	0,10	0,35

The species investigated belong to the section Heracleum and are close in qualitative coumarin composition. Quantitatively, the richest is *H. woroschilowii*, and this is promising as a source for obtaining furocoumarins. Xanthotoxin was used as a standard.

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All-Union Scientific-Research Institute of Drug Chemistry and Technology, Khar'kov.

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A STUDY OF THE CHEMICAL COMPOSITION OF A WORMWOOD INFUSION

G. A. Zhukov and V. V. Timofeev

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Artemesia absinthium L. (common wormwood) has long been used in medical practice. The chemical composition of this plant has been studied comparatively well [1-7] but information on the chemical composition of an infusion [8] is inadequate.

We have studied the chemical composition of an infusion obtained from the epigeal part of wormwood. Paper chromatography in various systems revealed coumarins, hydroxycinnamic acids, amino acids, and a small amount of flavonoids.

The wormwood infusion (5 liters) was evaporated in vacuum to give 700 ml of aqueous residue, which was then extracted with four 300-ml portions of ethyl acetate. The aqueous residue and the ethyl acetate extracts, concentrated to 150 ml served as the material for the isolation and identification of the compounds detected.

By column chromatography on silica gel (1:50) with chloroform as eluent, the ethyl acetate extracts yielded 0.035 g (from aqueous ethanol) of a substance with the composition $C_{10}H_8O_4$, mp 201-202°C. Its IR spectrum had absorption bands at (cm^{-1}) 1611, 1415, 1515 (C=C of a benzene ring), 1720 (C=C of a α-pyrone), and 3350 (OH group). The identity of this compound as scopoletin (7-hydroxy-6-methoxycoumarin) was confirmed by spectral results and by the absence of a depression of the melting point of a mixture.

Further elution of the column with chloroform–ethyl acetate (1:1) and then with pure ethyl acetate gave 0.03 g (from aqueous ethanol) of a substance with the composition $C_9H_6O_3$, mp 230-231°C. From its characteristic physicochemical properties (fluorescence, IR spectrum, chromatographic behavior), the substance was identified as umbelliferone (7-hydroxycoumarin).

In addition to the coumarins isolated, 2-, 3-, and 4-caffeoylquinic and chlorogenic acids were detected in the ethyl acetate extract by paper chromatography with hydroxycinnamic acid markers in the 5% acetic acid system. In the aqueous phase by paper chromatography in the butanol–acetic acid–water (7:1:2), the presence of 14 free amino acids was found, of which substances with R_f 0.14, 0.21, 0.28, 0.37, 0.41, 0.56, 0.61, and 0.70 were identified as asparagine, aspartic acid, glutamic acid, alanine, proline, tryptophan, valine and leucine, respectively. The presence of a very small amount of flavonoids of the flavone and flavonol groups was confirmed by the cyanidin reaction.

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