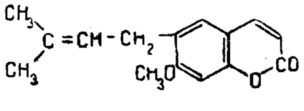
it may be assumed that the methoxy group is in position 7. Then the structural formula of the lactone must be as follows:



Suberosin

The lactone must be identical with suberosin, which is present in tropical species of Zanthoxylum (family Rutaceae) [3, 4].

The occurrence of suberosin in plants of the genus Peucedanum arouses great interest; it may be considered as one of the precursors in the biosynthesis of peucedanin and deltoin, which are found in some species of hogfennel [5–8].

Elution with a mixture of benzene and methanol (9 : 1) gave a hydroxycoumarin with the composition $C_9H_6O_4$, mp 227°–229° C, which was identified as umbelliferone; elution with a mixture of benzene and methanol gave β-sitosterol.

We established the presence of a glycoside whose hydrolysis gave 7-hydroxycoumarin in the water-soluble fraction

The microanalyses of the substances isolated were carried out by E. A. Nikonova, and the NMR spectra were taken by G. Yu. Pek.

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Sechenov First Moscow Order of Lenin Medical
Institute
All-Union Scientific Research Institute for
Medicinal and Aromatic Plants

THE COUMARINS OF THE ROOTS OF HERACLEUM CYCLOCARPUM

N. F. Komissarenko and I. Sh. Buziashvili

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Sphondin, xanthotoxin, isopimpinellin, pimpinellin, bergapten, isobergapten, and angelicin have previously been isolated from certain species of Heracleum growing in the territory of the Soviet Union [1]. The study of the seeds of fourteen species of Heracleum [2] has shown that all these species contain substances of coumarinic nature.

The present paper gives information on the coumarinic composition of the endemic species Heracleum cyclocarpum C. Koch., collected in the Caucasus, which has not been investigated previously.

The coumarins were extracted from 0.85 kg of the comminuted roots with 96% alcohol, the solvent was distilled off, and the residue was dissolved in benzene and purified by passage through a layer of alumina. The evaporated filtrate was transferred to a column of alumina (65 × 5 cm) and eluted with diethyl ether. The separation of the coumarin on the column was followed in UV light. This process gave six substances: sphondin, isopimpinellin, bergapten, isobergapten, pimpinellin, and osthole.

Osthole has been isolated from the genus Heracleum for the first time. To identify this substance it was demethylated to give ostenol [7-hydroxy-8-(γ, γ-dimethylallyl) coumarin] with mp 123°–124° C of composition $C_{14}H_{14}O_3$.

Paper chromatography of the total coumarins of the roots of Heracleum cyclocarpum showed the presence of xanthotoxin and angelicin.

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TRIFOLIN FROM LESPEDEZA TOMENTOSA

G. G. Zapesochnaya and A. I. Ban'kovskii

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The herb Lespedeza tomentosa (Thunb.) Sieb. (woolly Lespedeza) collected in 1964 in the Far East (1.4 kg) was comminuted and extracted with methanol, the solvent was distilled off in vacuum, and the residue was dissolved in water and transferred to a column of polyamide. The column was washed with water and then 10% alcohol eluted 4.5 g of a substance with a flavonoid structure, which was rechromatographed on polyamide. Yield 1.8 g (0.13%; from alcohol), mp 241°–242° C, composition $C_{21}H_{20}O_{11} \cdot 3/2H_2O$, λ_{max} 268 and 354 mμ.

The acid hydrolysis of the substance gave galactose, which was identified by paper chromatography [1] and kaempferol with mp 283°–284° C, λ_{max} 267, 323, 366 mμ, tetraacetate with mp 184°–185° C.

The position of the sugar residue in the kaempferol was ascertained by methylation and subsequent splitting off of the sugar [1]. This gave 5, 7, 4'-trimethylkaempferol with mp 146°–147° C, which was confirmed by the zirconium test [2].

Thus, a comparison of the physicochemical constants and the IR and UV spectra with literature data has shown that the substance isolated is kaempferol 3-galactoside (trifolin).

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STRUCTURE OF THE FLAVONOIDS OF CRATAEGUS CURVISEPALA

V. S. Batyuk

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We have previously reported the isolation from the leaves of Crataegus curvisepala Lindm. of the total flavonoids [1] and of eight individual flavonoids B, D, E, F, G, I, J, and K [2,3]. Flavonoids B, D, E, G, and J were isolated from hawthorn for the first time [2]. Flavonoid G, which we have called cratenacin is a new C-glycoside containing an acetyl group [4].

The present paper gives the results of a chemical study of flavonoids F, J, D, B, and E (table).

The aglycone of the flavonoid glycoside F was identified as vitexin. It was established by oxidative degradation with sodium metaperiodate [4] that the sugar component of the glycoside is rhamnose attached to the glucose molecule of vitexin through C_4. Thus, the results of a chemical and spectroscopic investigation show that the flavonoid that we have isolated is 5, 7, 4'-trihydroxyflavone 8-C-[β-D-glucopyranosyl (1 → 4)]-α-L-rhamnopyranoside, i.e., deacetyl-