The fatty-acid composition of the oil, according to the results of GLC, is given below:

Acid	Content, %
Caprylic	0.28
Tridecylic	0.66
Myristic	1.65
Palmitic	6.07
Stearic	3.54
Arachidic	0.66
Behenic	0.53
Palmitoleic	3.62
Oleic	26.01
Octadecadienic	55.62
Octadecatrienic	1.36

The UV spectra of the mixture of fatty acids shows the presence in it of 10.03% of acids with two double bonds in the conjugated position. This peculiar feature—the association in one oil of two types of unsaturated acids with isolated and conjugated double bonds—makes Niedzwedzkia similar to southern catalpa (Catalpa bignonoides, C. syringaefolia) in the oil of which the same association of acids has been found previously [2]. Since the catalpa also belongs to the family Bignoniaceae, this feature in the composition of the oil of Niedzwedzkia is another argument in favor of its assignment to this family.

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OSTRUTHIN — A COMPONENT OF THE ROOTS OF AGASYLLIS LATIFOLIA AND LIBANOTIS CONDENSATA

G. K. Nikonov, G. Yu. Pek, and V. V. Vandyshev

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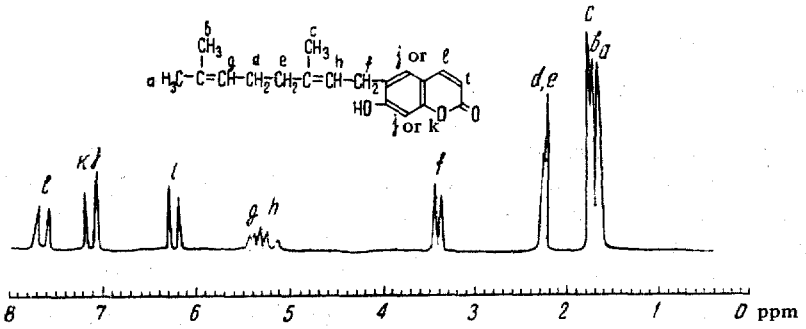
The existing schemes for the biosynthesis of furo- and pyranocoumarins from 6- or 8-alkyl-substituted umbelliferones permits the assumption that in plants these substances accompany one another.



Compounds of the type of osthenol [1], ostruthin [2], peumorisin (peucenol) [3, 4], and suberosin [5] have been found in a number of plants containing furocoumarins as associated components.

From the roots of Agasyllis latifolia (M. B.) Boiss of the family Umbelliferae, by column chromatography on alumina we have obtained a hydroxycoumarin of the composition $C_{19}H_{22}O_3$ with mp 117–118° C (aqueous methanol); (monoacetate $C_{21}H_{24}O_5$ with mp 78–79° C). On the basis of its physicochemical properties and NMR spectrum (figure), this substance was identified as ostruthin (6-geranyl-7-hydroxycoumarin). In this case, the ostruthin is accompanied by deltoin [5'-(1"-angeloyloxy-1"-methylethyl)-4', 5'-dihydrofuro-2', 3':7, 6-coumarin] [6].

We have isolated ostruthin from the roots of Libanotis condensata (L.) Grantz., family Umbelliferae, in which the presence of pteryxin (3'-acetyl-4'-angeloyl-2', 2'-dimethyl-3', 4'-dihydropyrano-5', 6':8, 7-coumarin) had been established previously [7]. The presence of ostruthin has also been detected in other species of the genus Libanotis by paper chromatography.

Thus, the presence of ostruthin in plants containing furo- and pyranocoumarins makes it possible to confirm modern ideas on the biogenesis of coumarin derivatives in plants. Evidently, 6- and 8-alkyl-derivatives of Umbelliferone are distributed among coumarin-containing plants more widely than is reflected in the literature. The limited nature of the information on this group of coumarins is probably connected with inadequate attention to the fractions of phenolic hydroxycoumarins.

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IRIDOIDS OF BETONICA FOLIOSA

V. I. Litvinenko and B. N. Aronova

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Iridoids are a group of natural compounds belonging to cyclopentanoid monoterpenes of a glycosidic nature [1, 2]. They are widely distributed in the families Rubiaceae, Scrophulariaceae, Globulariaceae, Plantaginaceae, and others. These compounds have also been discovered in some plants of the family Labiatae (Mellitis, Ajuga, etc.) [1–3]. On studying the chemical composition of the herb Betonica foliosa Rupr.—Stachys betonicaeflora Rupr., we detected in a methanolic extract on paper-chromatographic analysis [BAW system (4:1:2)] two substances of an iridoid nature the spots of which gave a blue-violet coloration with the benzidine—trichloroacetate reagent [2].

To characterize these compounds further, we attempted to isolate them and developed the following method. The raw material was extracted with 50% methanol. The extracts, evaporated to an aqueous residue, were treated several times with butanol. The dried butanolic extracts were evaporated to dryness, the residue was dissolved in a small volume of methanol, and the solution was diluted with water and filtered. The filtrate was freed from flavonoids and aromatic acids, respectively, on columns of Kapron and of alumina, and was evaporated to dryness. The residue was dissolved in ethanol and the impurities were precipitated with an excess of acetone. The purified combined iridoids were recrystallized from a mixture of ethanol and acetone (1:3) and ethanol—petroleum ether (1:1). A white crystalline substance with mp 154–155° C was isolated which was identified by its physicochemical properties, qualitative reactions, chromatographic behavior, and IR spectra as harpagide acetate [3]. A second substance obtained from the mother liquors may be identified, from its reaction products and a comparison with the substance obtained from the saponification of harpagide acetate, as harpagide [2, 3].