

OIL OF THE SEEDS OF CRYPTODISCUS DIDYMUS

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Cryptodiscus didymus (Rgl.) belongs to the family Umbelliferae [1]. The seeds are almost spherical with a diameter of 0.60–0.85 cm; bulk density 80 g/l, weight of 1000 seeds 45 g; proportion of kernel 40% and of husk 60%; oil content of the seeds 7.65%; light yellow oil with peculiar odor.

When a petroleum ether extract was concentrated, a white precipitate deposited which, after repeated recrystallization from ether, had a nonconstant melting point (85–100° C). Qualitative investigations have shown that the precipitate consists of a mixture of coumarins.

The physical and chemical indices of the oil and the fatty acids are as follows:

<u>Index</u>	<u>Oil</u>	<u>Fatty acids</u>
Density, g/ml (d_{20}^4)	0.9155	—
Refractive index, n_D^{20}	1.4794	—
Absolute viscosity, poise	0.46	—
Neutralization number, mg KOH/g	—	202.11
Mean mol. wt.	—	177.61
Iodine number, % (I_2)	100.66	106.33
Thiocyanogen number, % (I_2)	75.06	77.91
Content of unsaponifiables, %	0.74	—
Content of phosphatides calculated as P_2O_5 , %	0.77	—
Content of solid acids, %	23.11	—
Iodine number of the solid acids, % (I_2)	77.50	—

The fatty-acid composition of the oil (%) is: palmitic acid 5.98, oleic 38.28, petroselinic 19.91, linoleic 35.83.

The petroselinic acid was detected as described by Hilditch [2]; among the products of destructive oxidation were lauric and adipic acids. In addition, on paper chromatography a mixture of the saturated acids isolated by Bertram's method exhibited a spot of lauric acid, which was not present on a chromatogram of a mixture of the initial acids.

The triglyceride composition of the oil was determined by the method of enzymatic hydrolysis [3], %: G1 SSS) 0.01; G1 SSU) 0.60; G1 SUS) 0.04; G1 SUU) 4.00; G1 USU) 12.63; G1 UUU) 82.72.

In its technical properties, the oil belongs to the semidrying type.

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THE OIL OF THE SEEDS OF PEGANUM HARMALA

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Peganum harmala (harmel peganum) belongs to the family Zygophyllaceae. It grows in Central Asia and in the Caucasus [1] and contains up to 4% of alkaloids [2]. The dimensions of the seeds are 3 × 2 × 1 mm, the bulk density

Index	Oil	Fatty acids	Index	Oil	Fatty acids
Density, g/ml	0.9236	—	Thiocyanogen no., % (I ₂)	78.01	83.18
Relative viscosity, °E	6.58	—	Acetyl no., mg KOH/g	19.06	—
Refractive index, n _D ²⁰	1.4840	—	Content, %		
Saponification no., mg KOH/g	190.67	—	Saturated acids	—	11.77
Neutralization no., mg KOH/g	—	198.28	Unsaponifiabiles	3.28	—
Mean mol. wt.	—	282.28	Phosphatedes	0.45	—
Iodine no., % (I ₂)	121.67	132.47	(as stearooleocithin)		

552 g/l, and the oil content 15.86%. The oil is red-brown in color; the physical and chemical properties of it and the fatty acids isolated from it are given in the table.

The fatty-acid composition of the oil was determined by gas-liquid chromatography with the following result: C_{10:0}—0.40; C_{12:0}—0.31; C_{14:0}—0.65; C_{16:0}—7.71; C_{17:0}—1.06; C_{18:0}—2.76; C_{16:1}—1.35; C_{18:1}—23.14; C_{18:2}—62.62%.

The glyceride composition was established by the method of enzymatic hydrolysis [3] with the following result, %: SSS) 0.18; SSU) 1.96; SUS) 2.25; SUU) 24.37; USU) 5.32; UUU) 65.92.

Three pigments were found in the oil by column chromatography, and these were identified spectrographically as α- and δ-carotenes and α-chlorophyll [4]. The unsaponifiabiles fractions yielded a crystalline sterol with mp 132° C.

In respect of its technical properties, the oil is of the semidrying type.

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COUMARINS OF THE ROOTS OF ANGELICA ADZHARICA

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Angelica adzharica M. Pimen (adzharian angelica) is a monocarpic Caucasian plant of the family Umbelliferae [1]. Its roots, collected in the flowering phase in 1965 (Arsian range, Eastern Adzharia), have been studied. They were shown by a photocolometric method [2, 3] to contain 2.87% of coumarins consisting of a mixture of at least four substances with R_f 0.00, 0.20, 0.90, and 0.94 [in the n-hexane-benzene-methanol (5:4:1) system; Leningrad type B paper impregnated with a 10% solution of formamide in methanol].

By chromatography on acid alumina with elution by means of petroleum ether, bp 70-100° C, we have isolated from a methanolic extract of the roots two acylated coumarins with the composition C₂₄H₂₆O₇, mp 170-172° C (from methanol), [α]_D¹⁹ -35° (c 0.96; chloroform), R_f 0.94, and C₁₈H₁₈O₇, in the amorphous state, [α]_D¹⁹ -18.2° (c 1.1; chloroform), R_f 0.90. From its IR spectrum and a mixed-melting-point test, the first coumarin was identified as anomalin; the second, judging from its physicochemical constants and NMR spectrum, is a new pyranocoumarin, and has been