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FATTY-ACID COMPOSITION OF THE NEUTRAL LIPIDS OF SOME SPECIES OF THE FAMILY SOLANACEAE

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We have previously investigated the seed oils of various species of the Family Solanaceae growing on Azerbaidzhan [1, 2]. Continuing these investigations, we have established the fatty-acid (FA) composition of the neutral lipids (NLs) of the seeds of six species of this family that have not previously been studied: Kizeritskii nightshade,* false nightshade,* false Persian nightshade,* Persian nightshade,* black nightshade, Transcaucasian nightshade,* and yellow nightshade.

The neutral lipids were extracted from the ground seeds with petroleum ether as described in [1]. For the isolation of the FAs, the lipids were subjected to hydrolysis and the acids were esterified as in [3]. The fatty acid methyl esters were analyzed by the GLC method on a Chrom-4 instrument using a 4 mm × 2.5 m column filled with 17% of ethylene glycol succinate on Chromaton N-AW-DMCS at 196°C. The fatty acid methyl esters were identified by the procedure described in [4].

Below, we give the FA compositions of the neutral lipids of the seeds of six species of the family Solanaceae (GLC, %):

Nightshade	*14:0*	*15:0*	*16:0*	*16:1*	*18:0*	*18:1*	*18:2*	*18:3*	Σ_{sat}	Σ_{unsat}
Kizeritskii	1.1	0.8	12.3	0.9	2.2	19.5	62.1	1.1	16.4	83.6
False Persian	1.8	0.7	13.0	0.9	2.9	13.1	66.2	1.4	18.4	81.6
Persian	1.3	0.2	12.7	0.4	3.3	20.1	58.1	3.9	17.5	82.5
Black	1.2	0.1	13.2	0.7	2.1	15.2	62.4	5.1	16.6	83.4
Transcaucasian	0.8	0.2	12.6	1.2	2.3	14.2	63 5	5.2	15.9	84.1
Yellow	0.3	0.3	13.8	0.7	0.9	14.1	67.0	2.9	15.3	84.7

As we see, all the oils investigated had the same qualitative set of fatty acids, characterized by eight components. Differences were observed only in the relative amounts of individual fatty acids. Saturated acids were represented mainly by palmitic (16:0), while the main component of the unsaturated acids was linoleic (18:2). It must be mentioned that the NLs of the seeds of the species of the family that was studied are similar in their FA compositions of their oils to those of sunflower, poppy, safflower, peanut, sesame [5], pumpkin [6], and tomato [7] oils, which shows the possibility of their practical use as an additional raw material in the food industry and for technical purposes.

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*Literal translations of the Russian names; not identified in Western sources [Translator].

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COUMARINS OF Prunella vulgaris

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In a study of the epigeal part of Prunella vulgaris L. Family Lamiaceae collected in the environs of Tomsk in August, 1984, six benzo-α-pyrone derivatives have been detected by two-dimensional paper and thin-layer chromatography.

To isolate the coumarins, the comminuted herb was extracted exhaustively with hot 70% ethanol, the extract was concentrated and diluted with water (1:2) and was treated successively with petroleum ether (I) with chloroform (II), and with chloroform–ethyl acetate (2:1) (III) [1]. The combined dry residues II and III were transferred to a column of Woelm polyamide (5 × 20 cm). The fractions eluted by chloroform and chloroform–ethanol (2:1) were rechromatographed on Silufol plates in the benzene–ethyl acetate (2:1) system [2]. Two individual substances were isolated: A with R_f 0.72 and B with R_f 0.36. When the column was washed further with chloroform–acetone (7:3), the fractions contained a substance C with R_f 0.09 [3, 4]. The substances obtained were subjected to repeated recrystallization from methanol.

Substance A formed colorless acicular crystals with mp 233-236°C. UV spectrum: $\lambda_{max}^{C_2H_5OH}$ 325, 256 nm. The IR spectrum (tablets with KBr) had absorption bands at 1725 cm^{-1} (γ-pyrone) and 3300 cm^{-1} (OH group). On the basis of the results obtained, substance A was identified as umbelliferone.

Substance B formed white crystals with mp 205-207°C. On the basis of UV and IR spectroscopy and a mixed melting point it was identified as scopoletin.

Substance C formed yellowish acicular crystals with mp 269-271°C. UV spectrum: $\lambda_{max}^{C_2H_5OH}$ 262, 306, 355 nm. IR spectrum, ν_{max}^{KBr} (cm^{-1}): 1598, 1630, 1686 (C=C); 1718 (–C=O); and 3400 (OH group). The results of the investigation agreed with literature information for esculetin [5-7].

This is the first time that hydroxycoumarins have been isolated from Prunella vulgaris L.

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