as free lactarinic acid, the presence of a free carboxy group and the position of the oxo group at the C_6 atom being shown unambiguously by the nature of the fragmentation and by the signals in the PMR spectrum.

Thus, it has been shown that the presence of 6-oxooctadecanoic acid is a stable biochemical feature characteristic for the fungus L. theiogalus regardless of its ecological situation and also of the season of collection, and the time and conditions of storage of the fruiting bodies.

The search for stable biochemical characteristics for the purposes of chemosystematics presents considerable difficulties. Thus, for fungi of the genuc Lactarius attempts have been made to use azulenic and sesquiterpene derivatives as markers [7, 8]. However, these characteristics proved to be unstable in view of their dependence on ecological factors [7] and on the method of isolating the substances [8]. It is precisely for this reason that the results obtained on the possibility of the presence of lactarinic acid is of interest from the point of view of the search for taxonomic markers for fungi of the genus Lactarius.

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LIPOSOLUBLE PIGMENTS OF THE FRUIT OF Ficus carica

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In the literature, except for isolated results on the total amount of provitamin A [1, 2], there is no detailed information on the composition and amount of liposoluble pigments of the carotene and chlorophyll group in figs.

In connection with a planned increase in the volume and variety of products marketed by the preserving industry with the inclusion of an extract of figs possessing high nutritive and medicinal properties, we have investigated the carotenoids and chlorophylls of the fruit of Ficus carica L., varieties Smena and Turetskii korichneviyi, collected in the Gurdzhaan region of the Georgian SSR.

The sum of the pigments were isolated within the total lipids [3], and it was freed from accompanying liposoluble substances by column chromatography on silica gel [4] and was fractionated into carotenes, xanthophylls, and chlorophylls by the use of a sucrose column [5]. Individual, representatives were obtained by TLC on silica gel using the solvent systems heptane–methyl ethyl ketone (5:3) to separate the xanthophylls and chlorophylls,

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and hexane–acetone (96:4) for the carotenoids. In the process, the pigments were protected from degradation by the addition of a stabilizer [6] in the developing solvent systems and the operations were performed without the access of bright light.

The compounds were identified on the basis of their absorption spectra in the visible and ultraviolet regions [2, 5], by chromatography in the presence of markers, by staining with iodine vapor for the detection of colorless carotenes, and by means of the epoxide test with HCl [8] for the presence of a hypsochromic shift in the spectra of xanthophylls containing epoxide groupings.

The relative amounts of the liposoluble pigments in the fruit were determined by a colorimetric method on the basis of published molar extinction coefficients [7] (% on the total weight):

Pigment	Smena	Turetskii korichnevyi
Chlorophylls		
Chlorophyll a	74.1	67.6
Chlorophyll b	25.9	32.4
Total amount, mg/kg	10.7	25.3
Carotenoids		
Phytoin	1.7	–
Phytofluene	1.5	–
β-Carotene	4.5	–
γ-Carotene	32.3	10.4
Hydroxy-α-carotene	7.9	–
Kryptoxanthin	9.0	5.7
Rubixanthin	5.6	9.9
Lutein	15.5	41.8
Violaxanthin	7.6	14.8
Neoxanthin	9.4	8.6
Unidentified xanthophylls	5.0	8.8
Total amount, mg/kg	43.2	15.9

The pigment complex of the fruit of the varieties of Ficus carica studied had substantial differences. Thus, the predominating group of pigments in the case of the Smena variety was carotenoids (∿80%) while for Turetskii korichnevyi it was chlorophylls (∿60%). The absence of magnesium-free and phytol-free forms of chlorophyll in the fig is apparently explained by the low acidity of the fruit and the low chlorophyllase activity.

The carotenoid complex of the Smena variety includes twelve individual representatives, and that of the Turetskii korichnevyi variety, nine. The main carotenoid of the fruit of the Smena variety is α-carotene, while the Turetskii korichnevyi variety contains only a very small amount of carotenes. The low amount of hydrocarbon carotenoids in the Smena variety is probably connected with the high level of chlorophylls, the protection of which from oxidative degradation is accompanied by the conversion of the carotenes into xanthophylls. In the case of the xanthophylls of both varieties, lutein predominates. On the whole, the set of carotenoid pigments identified is typical for many fruits [2].

The results obtained permit the conclusion that in its carotenoids content the fig is close to the group of fruits with relatively high levels of yellow pigments (pineapple, banana, citrus fruit (flesh)) [1, 2]. The vitamin-active carotenoids amounted to 59.5% of the weight of the carotenoid complex of the fruit of the Smena variety and to 25.0% for that of the Turetskii korichnevyi variety.

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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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