what lower than those obtained by the method that we have developed and by the iodatometric method. The latter can apparently be explained by the use of a highly dilute solution of the titrant – a 0.001 M solution of sodium 2,6-dichlorophenolindophenolate – and the poor contrast of the color change at the end-point.

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ESSENTIAL OIL AND LIPIDS OF LEMONS OF THE VARIETY Yubilienyi

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Citrus oils (lemon, mandarin, etc.) are widely used in the production of detergents, perfumery, and cosmetics [1-3] and in the food industry as aromatizing agents.

We have investigated lemons of the variety Yubilienyi grown in the lemon groves of Tashkent province. We studied the essential oils contained in the peel and albedo of the fruit, and the lipid compositions of the seeds and the peel. Referred to the weight of the fruit, the peel amounted to 9% at a moisture content of 14.7%, and the albedo to 27% at a moisture content of 12.3%.

The essential oil was isolated by steam distillation [4]. It was found that the bulk of the essential oil was localized in the lemon peel (1.7% of the weight of the peel), and only 0.2% in the albedo.

The essential oils from the two anatomical parts of the plant had the same color (pale yellow or colorless), a pronounced agreeable lemony smell, and a sharp taste. The physicochemical indices of the essential oil from the peel were as follows: d_4^{20} 1.475, n_D^{20} 0.866, $[\alpha]_D^{20}$ + 69°, acid No. 0.65 mg KOH.

According to the results of TLC and chromato-mass spectroscopy, the oil consisted mainly of limonene (98%; M^+136 (10); main fragmentary ions, m/z: 121, 107, 94, 93, 92, 79, 68, 67 [5]) and there was 2% of α- and β-pinenes and citral as impurities.

The neutral lipids (NLs) of the lemon seeds were obtained by extracting the dried and ground seeds with petroleum ether. Their oil content was 29.7% at a moisture content of 17.8%; the oil content on the absolutely dry substance was 36.1%.

By TLC (systems 1-4) the following components were found in the NLs: hydrocarbons, sterol esters, triacylglycerols (TGs), hydroxyacylglycerols, free fatty acids, diacylglycerols, sterols, and monoacylglycerols.

The main components were the TAGs. The phospholipids (PLs) were isolated from the seeds by Folch's method [6]. The total yield of PLs was 0.5% of the weight of the defatted seeds. By TLC (systems 5 and 6) four components were detected in the total phospholipids: phosphatidylcholines, phosphatidylethanolamines, phosphatidylinositols, and N-acylphosphatidylethanolamines. The fatty acid compositions of the total NLs and PLs were determined:

	10:0	12:0	14:0	16:0	16:1	18:0	18:1	18:2	18:3	ΣS	ΣU
NLs	Tr.	0,2	0,2	21,3	0,6	Tr.	21.6	49.1	7,0	21,7	78,3
PLs	0,9	1,0	1.1	30,2	3.5	3,2	18,5	40,8	0,8	36,4	63,6

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Among the saturated acids palmitic predominated, and its amount in the total PLs was greater than in the total NLs. Among the unsaturated acids oleic and linoleic predominated. The total PLs were more saturated than the total NLs.

The NLs of the peel (after the extraction of the essential oil) were obtained by extracting the dried and ground raw material with hexane. The yield of hexane extract was 0.9%. In the NLs of the peel, as a difference from the above-mentioned classes of lipids revealed for the seeds, we detected very small amounts of oxidized carotenoids. No phospholipids were detected.

For thin-layer chromatography we used silica gel 5/40 μm and Chemapol-brand Silufol (Czechoslovakia). the spots of the neutral lipids were identified with iodine vapor and with 50% H_2SO_4/CH_3OH followed by heating at 100-110°C. To identify the phospholipids we used the specific Vaskovskii and Dragendorff reagents and ninhydrin.

Solvent systems: 1) hexane–ester–acetic acid(70:30:1); 2) hexane–ether (90:10 and 80:20); 3) heptane–methyl ethyl ketone–acetic acid (43:7:1); 4) heptane–benzene (9:1); 5) chloroform–methanol–25% ammonia (65:35:5); and 6) chloroform–methanol–water (65:35:5).

Chromato-mass spectra were taken on a MS 25RF instrument with 3% of OV-17 on Inerton Super, column dimensions 4 cm × 1 m, rate of flow of helium 30 ml/s. GLC was conducted on a Chrom-41 chromatograph with a flame-ionization detector and a stainless steel column 2 m long filled with 17% of PEGS on Celite 545, temperature 198-200°C.

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FUROCOUMARINS OF Ruta graveolens

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Interest in the study of common rue Ruta graveolens (R. divaricata), which grows in various regions of the world, is connected with the fact that it is widely used in folk medicine. In Chinese and Indian medicine it is used in the treatment of various diseases – in particular, inflammation, headache, asthenia, and intestinal atonia [1, 2], and, in the form of "rue oil," in arrhythmias, tachycardias, and convulsions [3], while in Central America on infusion of common rue is used in the treatment of measles and scarlatina [4]. The chemical composition of this plant has been investigated in fairly great detail. Monoterpenes [5], alkaloids [6-8], steroids [9], coumarins [10-12], and flavonoids have been isolated from various parts of it and have been studied.

We have now investigated the epigeal part of Ruta graveolens growing in Azerbaidzhan. The chemical composition of this material has not been studied previously. In the present communication we give the results of an investigation of the coumarin composition of this species. With this aim, 200 g of the epigeal part of the plant gathered in the flowering and incipient fruit-bearing period this was extracted four times (0.5 liter each time) with acetone, after which the extract was concentrated to the minimum volume (70 ml). The viscous

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