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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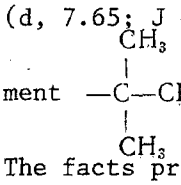
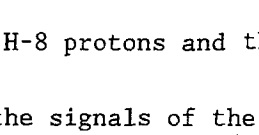
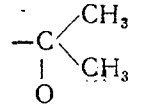
resin obtained was deposited on a column (3 × 80 cm) filled with neutral alumina (330 g). Elution was conducted with petroleum ether (bp 40-70°C) and with chloroform. This permitted the isolation of a total of three substances (I-III) belonging to the group of linear coumarins, as followed from their IR and PMR spectra (Specord IR-75, and Bruker AC-200, 200 MHz, 0 – TMS, δ, ppm).

Compound (I) had the composition $C_{12}H_8O_4$, mp 188-189°C. IR spectrum: 1720 (C=O of an α-pyrone), 1628, 1600, 1575, 1550 cm^{-1} (–CH=CH– bond in an aromatic ring). PMR spectrum of (I) (in $CDCl_3$): 6.25; 8.15 (d, J = 10 Hz, H-3 and H-4), 7.05; 7.60 (d, J = 2.5 Hz, H-4' and H-5'), 7.15 (s, H-8), 4.20 (s, $-OCH_3$). These results agree completely with the structure of bargapten [14].

The PMR spectrum of (II) (in $CDCl_3$), composition $C_{16}H_{14}O_3$, mp 87-89°C, contained, in addition to the signals of the protons H-4 (s, 7.75), H-5 (s, 7.70), H-8 (s, 7.45), H-4' (d, 7.65; J = 2.5 Hz) and H-5' (d, 6.85; J = 2.5 Hz), the signals of the protons of the fragment  (s, 1.55; 6H; m, 5.10; 2H; m, 6.20; 1H) in position 3 of an α-pyrone ring. The facts presented correspond to chalepin [15, 16].

Compound (III), with the composition $C_{19}H_{22}O_4$, mp 118-119°C, unlike (I) and (II), belonged to the group of linear 4',5'-dihydrofurocoumarins. Its PMR spectrum contained, in addition to the signals of the H-4, H-5, and H-8 protons and those of a  fragment in position 3 of an α-pyrone ring, the signals of the protons of the groups $-CH_2-$ in position 4' (d, 3.25; J = 8.5 Hz, 2 H), –CH– in position 5' (t, 4.70; J = 65 Hz, 1 H), and  (s, 1.2 and 1.3, 3 H each). These facts correspond to the structure of chalepensin [16-18].

Thus, the compounds investigated (I-III) have been identified as known furocoumarins – bergapten, chalepin and chalepensin, which have previously been isolated from wild rue by other authors [15-18].

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