RUTARIN FROM THE ROOTS OF Seseli grandivittatum

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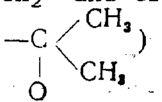
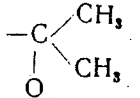
Earlier [1], in a study of the coumarin composition of a chloroform extract of the roots of Seseli grandivittatum Schischk., one of us isolated (–)-3'(R)-decursinol and a number of its derivatives. Now, continuing the investigation of this species, from an acetone extract of the roots we have additionally isolated glucoside (I) with the composition $C_{20}H_{24}O_{10}$, mp 140-142°C, possessing properties characteristic for linear 4',5'-dihydrofurocoumarins, as follows from the facts given below.

The IR spectrum of (I) showed characteristic absorption bands at (cm^{-1}) 3200-3600 (—OH group); 1700 (C=O of an α-pyrone ring); 1590, 1620 (—CH=CH—bond in an aromatic ring).

In the PMR spectrum of (I), in the weak-field region there were two doublets at (ppm) 6.20 and 8.0 (1H each), J = 9.5 Hz, and one singlet at 7.20 (1H), which are characteristic for protons in the 3,4,5-positions of a coumarin nucleus. Consequently the glucoside (I) under investigation was a 6,7,8-trisubstituted coumarin in which a dihydrofuran ring (doublet at 3.20, J = 8.5 Hz, Ar—CH_2— and triplet at 4.70, H-5') with a hydroxyisopropyl group (singlets at 1.10 and 1.20,  $-\underset{\substack{|\\ O}}{C}\Big\langle{}^{CH_3}_{CH_3}$) occupied the 6,7-position and the glucosyl residue was present in position 8. The signals of this fragment appeared in the spectrum in the form of a multiplet at 3.30-5.5 (10H) and a doublet at 5.10 (1H), J = 7.0 Hz (β-anomeric proton). The last-mentioned fact showed that the glucoside (I) under investigation was 8-β-D-glucopyranosyloxy-5'-hydroxyisopropyl-4',5'-dihydropsoralen, i.e., rutarin [2], which unambiguously agreed with the results of acid hydrolysis of (I) with 4% hydrochloric acid. This gave an aglycon (II) with the composition $C_{14}H_{14}O_5$, mp 189-191°C and D-glucose, which were identified through their IR and PMR spectra and also by chromatography on Silufol plates in the butanol–acetone (1:1) system with authentic specimens [3].

The IR spectrum of (II) contained absorption bands at (cm^{-1}) 3500 (—OH group); 1690 (C=O of an α-pyran ring); and 1580, 1600, 1620 (—CH=CH— bond in an aroamtic ring), while in the PMR spectrum there were the signals of the following protons (ppm): H-3 and H-4 (doublets at 6.20 and 7.90, J = 10.0 Hz), H-5 (singlet at 7.0), Ar—CH_2— (doublet at 3.20, J = 8.0 Hz), H-5' (triplet at 4.70)  $-\underset{\substack{|\\ O}}{C}\Big\langle{}^{CH_3}_{CH_3}$ (singlet at 1.20) and a phenolic hydroxy group (broadened singlet at 9.60). No signal from the alcoholic hydroxy group was detected in the spectrum because of exchange reactions with the solvent.

Thus, the facts presented agree completely with the structure of rutaretin, obtained previously from Ruta graveolens L. [2].

The results given above agree with the ^{13}C NMR spectra of (I) and (II), the chemical shifts (δ, ppm) of which are given on next page.

As a result of the investigation performed it was shown that an acetone extract of the roots of Seseli grandivittatum Schischk. contained rutarin glucosite, in addition to compounds isolated previously.

IR spectra were taken on a Specord 75IR spectrometer in paraffin oil, and NMR spectra on a Bruker AC-200 MHz spectrometer in DMSO with TMS as internal standard, δ, pp. The course of the reaction and the purity of the compounds obtained were monitored by the TLC

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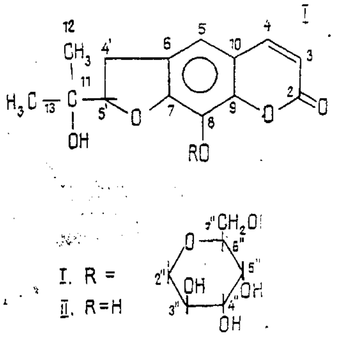

	I	II		I	II
C-2	160,32	160,80	C-12	25,99	25,98
C-3	111,52	111,20	C-13	25,31	24,40
C-4	144,96	142,74	C-2″	101,54	
C-4′	29,09	28,95	C-3″	69,89	
C-5	117,46	113,69	C-4″	73,97	
C-5′	91,49	91,32	C-5″	76,93	
C-6	146,03	144,19	C-6″	77,46	
C-7	128,18	127,94	C-7″	60,78	
C-8	126,77	125,46			
C-9	152,83	150,09			
C-10	113,06	112,72			
C-11	70,09	72,18			

method on Silufol-254 plates (Czechoslovakia) in the ethyl acetate—benzene (1:2) and butanol—acetone (1:1) systems.

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PHENOLIC COMPONENTS OF THE UNSAPONIFIABLE FRACTION OF THE LIPIDS OF Psorlea drupaceae

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We have previously reported the composition of the saponifiable fraction of the lipids from the epigeal part of drupe scurf pea, *Psoralea drupaceae* Bunge [1]. We established that the unsaponifiable fraction of this plant contains a considerable amount of furocoumarins, coumarins, and meroterpenes. The object of study consisted of these substances as present in the fruit, flowers, and leaves of the plant gathered in the flowering period in Chimkent province. We investigated the fractions obtained from whole fruits, flowers, and leaves by extraction with petroleum ether and also with ethanol after their treatment with the first solvent.

This successive extraction enabled a clear separation of the components to be achieved, since the fatty acids were elminated in the first stage. The substances were separated and identified by the GLC method on a Vyrukhrom instrument with a flame-ionizaton detector in a 0.4 × 300 cm steel column filled with Chromaton N-AW-HMDS (0.12-0.16 mm) upon which 5% of the stationary phase DS-550 had been deposited. The temperature of the column was 242°C and that of the evaporator 300°C, the pressure of the carrier gas (argon) being 1.26 kg/cm^2.

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