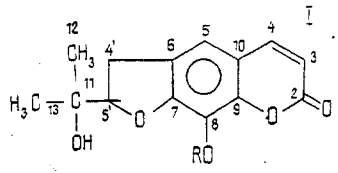

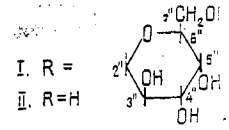

I. R =

II. R=H

	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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TABLE 1. Amounts of Coumarins and Meroterpenes in the Epigeal Part of Scurf Pea*

Substance	In the petroleum extract, %			In the alcoholic extract, %		
	fruit	flowers	leaves	fruit	flowers	leaves
1. X_1	1,3	6,7	0,8	1,0	17,3	5.7
2. X_2	0,4	1,5	1.9	0,8	9.8	2,4
3. X_3	1,2	1,5	0.6	0,9	4,2	1.7
4. Coumarin	0,3	0.2	0,4	0,5	3,3	2,5
5. X_4	Tr.	Tr.	0,3	0,1	6,2	0.8
6. X_5	Tr.	0.2	0,4	0.2	33,2	17.6
7. 4-Hydroxycoumarin	Abs.	Tr.	0,3	0,1	1,1	1,3
8. Herniarin	Abs.	Tr.	0,1	0,2	0.5	0,8
9. Angelicin	Abs.	0,9	1,4	0,7	8,4	4,0
10. Psoralen	2,2	2.9	3.1	0,3	1,2	1,8
11. Umbelliferone	1,2	1,4	0,8	0,4	0,7	0,8
12. Isodrupanol	0,9	2,9	1,8	.2,0	0,2	1,4
13. Drupanol (bakuchiol)	80,5	57.4	42,8	73,2	6,2	45,7
14. Isobergapten	0,6	0,9	1,9	0.7	0,2	1.2
15. Xanthotoxin	0,7	2,2	1.8	Abs.	Tr.	0,6
16. Sphondin	0,6	2.1	1,6	Abs.	Tr.	0,6
17. Bergapten	0,6	2,2	1,9	1,4	Tr.	0,7
18. Pimpinellin	3,2	4,6	3,1	3,8	0,6	2,3
19. X_6	0,6	2,8	3,9	0,3	2,2	2,0
20. Drupenin	1,5	4.7	14.3	0,5	3.0	0.6
21. Hydroxydrupanol	3.6	4,0	14,2	11,2	1,2	4,2
22. Isopimpinellin	0,6	0,6	1,5	1,5	0,3	0,8
23. X_7	Abs.	0,3	1,1	0,2		0.5

*Abs.) absent; Tr.) traces.

The substances were identified from their retention times with markers that had been isolated by column chromatography previously and had been identified by IR spectroscopy and by mixed melting points with authentic specimens. The presence of 23 substances was established, and of these 16 were identified. As was found, the unsaponifiable part of the lipid fraction and the alcoholic extract contained the same components but in different proportions. The results of the investigation are given in Table 1.

Furocoumarins were represented by psoralen, bergapten, xanthotoxin, isopimpinellin, angelicin, pimpinellin, sphondin, and isobergapten; and coumarins by umbelliferone, coumarin, 4-hydroxycoumarin, and herniarin. In the petroleum extract of the leaves and fruit linear furocoumarins predominated, while in the alcoholic extracts there was a larger amount of angular furocoumarins. Thus, to obtain psoralen it is desirable to carry out the extraction of, in particular, the leaves and flowers with petroleum ether, and to use alcohol to extract angelicin. In the first case, the ratio of psoralen and angelicin is 2:1, and in the second 1:2. From this point of vioew, the method of obtaining the preparation "psoralen" adopted in industry cannot, in our opinion, be regarded as appropriate, since it is based on extraction with ethanol [2], which leads to an enrichment of the preparation with angelicin. The major components in scurf pea are meroterpenes, among which the main one is drupanol (= bakuchiol). It must be mentioned that the fruit, leaves, and flowers also contain unidentified substances, their amount in alcoholic extracts of the flowers being 71.9%.

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