TABLE 1. Fatty Acid Compositions of the Lipids of the Pollens (Pollen Pellets) of Some Herbaceous Plants

Acid	Amount, %				Acid	Amount, %			
	dandelion	fireweed	buckwheat	clover		dandelion	fireweed	buckwheat	clover
$C_{10:0}$	0,20	Tr.	—	—	$C_{17:2}$	0,12	Tr.	—	—
$C_{12:0}$	4,13	Tr.	2,1	1,1	$C_{18:0}$	13,44	Tr.	11,7	3,4
$C_{13:0}$	—	—	Tr.	Tr.	$C_{18:1}$	7,16	Tr.	16,1	13,5
$C_{14:0}$	0,17	Tr.	1,6	1,8	$C_{18:2}$	16,43	Tr.	4,1	11,6
$C_{14:1}$	Tr.	Tr.	0,2	0,2	$C_{18:3}$	27,41	83,68	9,2	1,7
$C_{15:0}$	Tr.	Tr.	0,9	0,5	C_x	3,86	Tr.	—	—
$C_{15:1}$	—	—	0,3	0,5	$C_{19:0}$	0,10	Tr.	—	—
$C_{16:0}$	1,27	Tr.	—	—	$C_{20:2}$	0,16	0,12	0,8	2,9
$C_{16:0}$	21,99	15,88	44,9	42,0	$C_{20:3}$	—	—	0,4	—
$C_{16:1}$	Tr.	Tr.	3,0	12,8	$C_{20:4}$	—	—	2,0	2,9
$C_{16:2}$	0,16	Tr.	—	—	$C_{21:0}$	2,58	Tr.	—	—
$C_{17:0}$	0,36	Tr.	0,5	1,0	$C_{22:0}$	—	—	0,6	1,0
$C_{17:1}$	0,20	Tr.	0,6	0,8	$C_{22:1}$	—	—	1,1	2,3
						99,74	99,68	100,1	100,0

The gas—liquid chromatographic results are given in Table 1.

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COUMARINS AND CARDENOLIDES OF *Periploca sepium*

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Two species of the genus *Periploca sepium* (silk vine) grow in the USSR — *P. graeca* L. (Grecian silk vine) and *P. sepium* Bunge (Chinese silk vine) [1].

The isolation from the Grecian silk vine of coumarins, flavonoids, and cardenolides has been reported previously [2]. We have found no reports of a chemical study of Chinese silk vine, which grows on the territory of the Soviet Union in the coniferous/broad-leaved forests of the Ussuri krai.

In the present paper we give the results of a study of the coumarins and cardenolides of the bark and young shoots of Chinese silk vine grown in the Moscow area.

The coumarins and cardenolides were isolated by a method described previously [2]. One substance of coumarin nature (I) and one substance of cardenolide nature (II) were obtained.

Substance (I), with the composition $C_9H_{10}O_4$, mp 201-203°C, fluoresced bright blue in UV light. λ_{max} (in ethanol), nm: 256, 295, 340. Acetylation gave a monoacetate with mp 176-177°C and the empirical formula $C_{12}H_{10}O_5$.

From the physicochemical properties of its acetyl derivative, its mixed melting point and that of its acetyl derivative with authentic samples, and IR spectra, the compound under investigation was identified as scopoletin [2].

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Substance (II) had the composition $C_{30}H_{56}O_{19}$, mp 206-209°C, $[\alpha]_D^{20}$ + 24 ± 2° (c 0.5; methanol). Acid hydrolysis with 0.01% sulfuric acid led to the formation of periplogenin [$C_{23}H_{34}O_9$, $[\alpha]_D^{20}$ + 28.0° (c 0.3; methanol)], D-glucose and D-cymarose. Enzymatic cleavage yielded periplocymarin [$C_{30}H_{46}O_9$, $[\alpha]_D^{20}$ + 28.0° (c 0.3; methanol)], and D-glucose.

On the basis of its conversion products and a mixed melting point, substance (II) was identified as periplocin (II).

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COUMARINS OF *Ptarmica impatiens* AND *P. ptarmicifolia*

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Continuing a study of plants of the genus *Ptarmica*, family Asteraceae [1, 2], we have investigated the coumarins of *Ptarmica impatiens* DC (*Achillea impatiens* L.) collected in the flowering period in the Altai krai in August, 1981.

The air-dry epigeal part was extracted with 80% ethanol. The resulting extract was concentrated in vacuum to an aqueous residue, which was treated with hexane, and with chloroform. The chloroform extract, after the solvent had been distilled off, was deposited on a column of silica gel. Elution was performed with the following solvent systems: 1) hexane—ethyl acetate (9 : 1); 2) butan-1-ol—CH_3COOH—H_2O (4 : 1 : 5). Three compounds were isolated in the individual state.

Substance (I), composition $C_{11}H_{10}O_4$, formed colorless crystals with mp 144-146°C. UV spectrum, $\lambda_{max}^{C_2H_5OH}$, nm: 229, 295, 343. IR spectrum, ν_{max}^{KBr}, cm^{-1}: 1720 (C=O), 1620, 1560, 1520 (C=C). The substance was identified as scoparone [3].

Substance (II), with the composition $C_{10}H_8O_4$, mp 204-205°C, formed pale yellow crystals. UV spectrum, $\lambda_{max}^{C_2H_5OH}$, nm: 230, 254, 298, 346. IR spectrum, λ_{max}^{KBr}, cm^{-1}: 1720 (C=O); 1613, 1570 (C=C); 3045 (OH group). The compound isolated was identified as scopoletin. [3].

Substance (III), with the composition $C_{16}H_{18}O_9$, formed colorless crystals with mp 217-219°C, and proved to be a glycoside; R_f 0.42 in system 2. The hydrolytic cleavage of the glycoside with 5% H_2SO_4 led to scopoletin and D-glucose. Substance (III) was therefore scopoletin 7-glucoside, i.e., scopolin.

The coumarins scoparone and scopoletin were also isolated from the epigeal part of *Ptarmica ptarmicifolia* (Willd.) G. [*Achillea ptarmicifolia* (Willd.)] collected in the flowering period in the central Caucasus in August. The substances were identified as known compounds from the results of UV and IR spectroscopy, melting point determinations, and a comparison with authentic samples.

Continuing the further study [1, 2] of *Ptarmica bisserata* (Bieb) DC. (*Achillea bisserata*, M. B.), endemic for the Caucasus, from a hexane extract we have isolated an acid with mp 94°C (ethanol), having the composition $C_{30}H_{60}O_2$, M^+ 452. According to its IR and mass spectrum, this compound belonged to the acyclic saturated organic monobasic acids of normal structure and it is in fact melissic acid [4].

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