A comparison of the IR spectra and physicochemical constants of substances (II) with literature information [5, 6] permitted the substance to be identified as the methyl ether of umbelliferone.

The UV spectra of the other substances were similar to those of (I) and (II), which permitted them also to be assigned to the lactone group.

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ESTERS OF *Cuscuta lehmanniana*

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UDC 547.587.52+547.39

On studying in the flowering phase the epigeal part of *Cuscuta lehmanniana* Bge (Lehmann's dodder) growing on elms (Ulmus) in the region of Tashkent, we detected substances giving a positive reaction with diazotized sulfanilamide which were not, however, coumarins. For their isolation, the dried and comminuted raw material was extracted with methanol. The extract was concentrated, washed with petroleum ether, and evaporated to dryness. The dry residue obtained was chromatographed on a column filled with KSK silica gel. The column was washed with petroleum ether and mixtures of it with ethyl acetate with gradually increasing concentrations of the latter, 1-liter fractions being collected. Fractions 4-8 yielded a crystalline substance (I) with the composition $C_{10}H_{10}O_3$, mp 139°C, M^+ 178, R_f 0.62 (chromatography on Silufol; petroleum ether–ethyl acetate (3:1) system; spots revealed with the diazo reagent). On the basis of spectral characteristics (UV, IR, NMR, and mass spectra) and also of the saponification products, (I) was identified as the known methyl p-coumarate [1]. Fractions 10-12 yielded substance (II) with the composition $C_{25}H_{40}O_4$, mp 94-97°C (from petroleum ether), M^+ 404, R_f 0.59, which we have called cuscutin.

UV spectrum: λ_{max} 235, 248, 305, 335 nm (log ε 4.06, 4.08, 4.12, 4.26); in the presence of alkali it gave a bathochromic shift by Δ55 nm, showing the presence of a free phenolic hydroxyl.

The IR spectrum had bands at (ν_{max}, cm^{-1}) 3490 and 3350 (hydroxy groups), 1690 (carbonyl of an ester of an unsaturated acid), 1640, 1605, 1585 (aromatic nucleus).

The NMR spectrum of cuscutin showed signals from the protons of a 1,3,5-trisubstituted benzene ring: singlets at 7.20, 6.95, and 6.84 ppm (1H each), and also of two olefinic protons from a trans-hydroxycinnamic acid residue — doublets at 7.55 and 6.22 ppm, J = 15.5 Hz (1H each); a triplet at 4.17 ppm (2H) corresponds to the hemiacyl protons of the alcoholic moiety. In the strong field there are the signals of methylene protons at 1.21 ppm (29H) and a triplet at 0.84 ppm (3H — primary methyl group). On saponification with alkali, cus-

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Translated from Khimiya Prirodnykh Soedinenii, No. 1, p. 112, January-February, 1977. Original article submitted September 14, 1976.

cutin formed 3,5-dihydroxycinnamic acid with mp 243-245°C [2] and the known hexadecyl alcohol with the composition $C_{16}H_{33}OH$ (amorphous).

Fractions 17-23 yielded a third ester, with the composition $C_{10}H_{10}O_4$, mp 162-163°C, M^+ 194, R_f 0.35. Its saponification also formed 3,5-dihydroxycinnamic acid with mp 243-245°C. In view of the composition of the substance, it may be concluded that it is the methyl ester of the above-mentioned acid. This was confirmed by its physicochemical constants and NMR spectrum which contained a three-proton singlet at 3.62 ppm. The substances isolated from the *Cascuta lehmanniana* have not been detected in the elm.

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THE STRUCTURE OF A FLAVONOID GLYCOSIDE FROM *Filipendula ulmaria*

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UDC 547.972

In an investigation of the flora of the Belorussian SSR for its flavonoid content, we have found a high concentration of these compounds in the leaves of *Filipendula ulmaria* L. Maxim. (European meadowsweet).

Ethanolic extracts yielded the main flavonoid component with mp 207-210°C, mp of the acetate 122-125°C, λ_{max} 254, 266 shoulder, 368 nm, $[\alpha]_D^{20}$ −63.5° (c 0.33; methanol). The main absorption maxima in the UV region — short-wave (254 nm) and long-wave (368 nm) — are within the limits characteristic for the absorption of a flavonol nucleus [1]. The compound isolated is a flavonol glycoside, as is shown by Bryant's cyanidin reaction [2]. On acid hydrolysis, it split into glucose and quercetin (308-309°C, acetate with mp 181-185°C, UV and NMR spectra).

The NMR spectrum of the substance contained, in addition to the signals corresponding to quercetin, a doublet at 5.02 ppm, 1H, J = 7 Hz, representing the signal of the β-anomeric proton of glucose. The six glucose protons were represented by signals in the 3.2-3.8 ppm region. A comparison of the specific rotation of the glycoside isolated with those of known flavonoid β-monoglucosides [3] showed the pyranose form of the glucose ring.

Two quercetin monoglucosides are known with the D-glucose residue in position 3 — isoquercitrin [4, 5, 6] and hirsutrin [7], one with it in position 7 — quercimeritrin [8, 9] and one with it in position 4' — spiraeoside [10]. The compound that we isolated does not correspond to any of the compounds mentioned above with respect to R_f values, melting point of the acetate, and characteristics of its UV, IR, and NMR spectra. The lemon-yellow fluorescence of the substance on chromatograms in UV light suggests the presence of the carbohydrate substituent in position 3', 4', or 7. However, on the basis of UV spectra (λ_{max} 254, 266 sh., 368 nm; +NaOAc 277, 390 nm; + NaOAc + H_3BO_3 254, 269, 370 nm; + $AlCl_3$ 263, 426 nm; + $AlCl_3$ + HCl 259, 426 nm; + NaOMe 279, 420 nm) the compound isolated has free hydroxy groups in positions 3, 4', 5, 7. Consequently, the only possible remaining position for the glucose is position 3'.

On the basis of the experimental results, the glucoside from the flowers of European meadowsweet has the structure of 3'-β-D-glucopyranosyloxy-3,4',5,7-tetrahydroxyflavone.

Vitebsk Medical Institute. All-Union Scientific-Research Institute of Medicinal Plants, Moscow. Translated from Khimiya Prirodnykh Soedinenii, No. 1, p. 113, January-February, 1977. Original article submitted April 5, 1976.