

Continuing a chemical study of plants of the genus *Centaurea* L. [1, 2], we have investigated the epigeal part of *Centaurea cyanus* L., collected in the flowering period, for the presence of coumarin compounds.

The herb was extracted with 80% acetone by the filtration-extraction method. The extract was concentrated in vacuum to an aqueous residue, the lipophilic substances and chlorophyll substances that had deposited were filtered off and the filtrate was extracted successively with chloroform and ethyl acetate. The chloroform extract was evaporated and the residue was deposited on a column of silica gel, which was washed with toluene and with chloroform-ethyl acetate mixtures, and then with pure ethyl acetate. Separation was monitored by paper chromatography in the chloroform-formamide system. As a result, two substances of coumarin nature were isolated.

Substance (1) —  $C_{10}H_8O_4$ , mp 204-206°C,  $\lambda_{max}$  230, 256, 298, 343 nm: 7-hydroxy-6-methoxy-coumarin (scopoletin) [3].

Substance (2) —  $C_9H_6O_3$ , mp 228-230°C,  $\lambda_{max}$  250, 328 nm: 7-hydroxycoumarin (umbelliferone) [3].

The substances were identified from their physicochemical properties,  $R_f$  values in various solvent systems, the results of UV and IR spectroscopy, and mixed melting points with authentic samples.

We have isolated the same coumarins from *Centaurea pseudomaculosa* Lam., *Centaurea scabiosa* L., and *Centaurea solstitialis* L.. Only scopoletin was detected in other species investigated — *Centaurea phrygia* L., *Centaurea pseudophrygia* C. A. Mey, *Centaurea jacea* L., and *Centaurea squarrosa* Willd.

## LITERATURE CITED

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3. G. A. Kuznetsova, *Natural Coumarins and Furocoumarins* [in Russian], Nauka, Leningrad (1967).