

A sample of the air-dry raw material from each of several species of plants of the genus *Campanula* L. [1], was extracted successively with chloroform, methanol, and ethanol. The alcohol was evaporated off in vacuum and the residue was dissolved in water. The solution was treated with ethyl acetate, and from the ethyl acetate extract the combined flavonoids were precipitated with dry chloroform and they were separated on polyamide sorbent into a glycoside fraction (desorption with 30% ethanol) and an aglycone fraction (concentrated ethanol). The aglycones were separated on polyamide sorbent activated with alkali (elution with CHCl_3 - CH_3OH in various proportions) [2]. This gave the following individual compounds: (I) with the composition $\text{C}_{15}\text{H}_{10}\text{O}_6$, mp 271-275°C (acetate with mp 119-120°C), identified as 3,4',5,7-tetrahydroxyflavone (kaempferol); (II) with the composition $\text{C}_{15}\text{H}_{10}\text{O}_7$, mp 312-315°C (acetate with mp 198-200°C), corresponding to 3,3',4',5,7-pentahydroxyflavone (quercetin); and (III) with the composition $\text{C}_{15}\text{H}_{10}\text{O}_6$, mp 332-334°C (acetate, mp 226-231°C), consisting of 3',4',5,7-tetrahydroxyflavone or luteolin.

The structures of these substances were shown on the basis of the products of alkaline degradation, mixed melting points, UV and IR spectra, and the complete coincidence of these characteristics with those of authentic samples.

We isolated the first two substances from *Campanula oblongifolia* (C. Koch) Charadze, *C. hypopolia* Trautv. Grossh., *C. kachetica* Kantsch. (quercetin) and *C. saxifraga* M. B. (kaempferol), and luteolin from *Campanula rapunculoides* and *C. lactiflora* M. B.

The glycosidic fractions were studied by two-dimensional chromatography using qualitative reactions [3]. They were found to consist of derivatives of flavone [4] and of flavonol [5]. The glycosides isolated were subjected to acid hydrolysis and the combined aglycones obtained were separated by shaking an ethereal extract with a 1% solution of $\text{Na}_2\text{B}_4\text{O}_7 \cdot 10\text{H}_2\text{O}$ followed by purification on polyamide [6].

After the hydrolysis of the glycosides, kaempferol was found in the ethereal phase and quercetin in the aqueous phase from plants of the species *Campanula elatior* (Fom.) Grossh., *C. taurica* Juz., *C. Hohenackeri* Fisch. et Mey., *C. sarmatica* Ker.-Gawl., *C. oblongifolia* (C. Koch) Charadze, *C. hypopolia* Trautv. and *C. Biebersteiniana* Roem. et Schult. The same aglycones were identified by paper chromatography in the presence of markers in hydrolyzates from *Campanula darialica* Charadze, *C. latifolia* L., *C. rapunculoides* L., *C. Grossheimii* Charadze, *C. cordifolia*, C. Koch., *C. bononiensis* L., *C. ochroleuca* Kem.-Nath., *C. collina* M. B., *C. Kluchorica* Kolak., *C. ciliata* Stev., *C. Aucheri* A. DC., *C. argunensis* Rupr., *C. Meyeriana* Rupr. and *C. besenginica* Fom.

In addition to kaempferol and quercetin, other flavonols were found in the majority of the species that we studied. Thus, from the products of the hydrolysis of *C. hypopolia* Trautv. by preparative chromatography on paper we obtained a substance (IV) with the composition $\text{C}_{16}\text{H}_{12}\text{O}_7$, mp 290-294°C, R_f 0.82 [BAW (4:1:5)], characterized as 3,3',4',5-tetrahydroxy-7-methoxyflavone or rhamnetin [7, 8].

After the hydrolysis of the glycosides isolated from *C. ossetica* M. B., *C. Lambertiana* A. DC., and *C. Stevenii* M. B. by chromatography on a column of polyamide we obtained luteolin. It was also found chromatographically in *C. abietina* Criseb. et Schenk., *C. Alberti* Trautv., *C. altaica* Ldb. and *C. wolgensis* P. Smirn.

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Thus, the flavonoid compounds of 24 species of the section Medium D. C. consist mainly of kaempferol, quercetin, rhamnetin [9], and their glycosides. The presence of luteolin and its glycosides has been found to be characteristic for eight species of the section Rapunculus (Fourr.) Boiss. This distribution largely corresponds to the subdivision of the genus Campanula (according to Boissier [10] in An. A. Fedorov's treatment) in "Flora of the USSR."

The study of the glycoside composition of plants of the genus Campanula L. is continuing.

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