FLAVONOL GLYCOSIDES OF Campanula cephalotes

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UDC 547.972

We have previously [1] reported the isolation of two flavonoids – (I) and (II) – from the herb Campanula cephalotes Nakai collected in the Buryat ASSR. On further separation of the combined flavonoids on Kapron, two more substances were isolated.

Substance (II), $C_{22}H_{22}O_{12}$, mp 217-218°C (from 70% ethanol), $[\alpha]_D^{20} - 65°$ (c 0.3; dimethylformamide); UV spectrum: $\lambda_{max}^{C_2H_5OH}$ 360, 300, 258 nm. From the products of its hydrolysis with 2% sulfuric acid we isolated D-glucose and the aglycone, $C_{16}H_{12}O_7$ with mp 294-296°C (from ethanol). The acetate of the aglycone had mp 190-192°C. On the basis of spectroscopy in the UV region with additives, the products of alkaline degradation, and demethylation, the aglycone was characterized as 3,3',4',5-tetrahydroxy-7-methoxyflavone (rhamnetin).

Substance (IV), $C_{21}H_{20}O_{12}$, mp 220-222°C (from ethanol), $[\alpha]_D^{20} - 30°$ (c 0.3; ethanol), $\lambda_{max}^{C_2H_5OH}$ 362, 300, 260 nm was readily hydrolyzed by acid to D-glucose and an aglycone $C_{15}H_{10}O_7$, mp 310-312°C (mp of the acetate 197-198°C), identified as quercetin.

The results of the quantitative acid hydrolysis of substances (III) and (IV) showed that the sugar and the aglycone were present in a ratio of 1:1.

The rate of hydrolysis and the UV spectra with diagnostic reagents showed that in both the glycosides the D-glucose was attached at C_3.

On the basis of enzymatic hydrolysis with emulsin, a comparison of the $[M]_D$ value of the glucosides with $[M]_D$ of phenyl β-D-glucopyranoside [2], and IR spectroscopy, the first substance can be characterized as rhamnetin 3-O-β-D-glucopyranoside [3], and the second as quercetin 3-O-β-D-glucopyranoside.

This is the first time that these two flavonoids, and those isolated previously from Campanula cephalotes, have been found among representatives of the family Campanulaceae.

LITERATURE CITED

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Leningrad Institute of Pharmaceutical Chemicals. Translated from Khimiya Prirodnykh Soedinenii, No. 3, p. 435, May-June, 1973. Original article submitted October 17, 1972.