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FLAVONOIDS OF THE EPIGEAL PART OF *Cicer mogoltavicum*

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Continuing an investigation of the flavonoids of plants of the genus *Cicer*, we have studied the phenolic components of *Cicer mogoltavicum* A. Kor. Earlier, inermin and formononetin had been isolated from the epigeal part of this plant [1], and formononetin, biochanin-A, pratensein, ononin, inermin, and trifolirhizin from the roots [2].

The ethyl acetate fraction of an alcoholic extract of the epigeal part of *C. mogoltavicum* gathered close to Angren, Tashkent oblast, was chromatographed on a column of silica gel in a chloroform–methanol gradient system.

This led to the isolation of biochanin-A and flavonoids (**1-4**).

Substance (1) — $C_{15}H_{10}O_6$ (H^+ 286), mp 275-277°, λ_{max}^{EtOH} 265-370 nm, was identified as kaempferol (3,4′,5,7-tetrahydroxyflavone) [3].

Substance (2) — $C_{15}H_{10}O_6$ (M^+ 286), mp 328-331° (decomp.), λ_{max}^{EtOH} 260, 274, 356 nm, was identified as luteolin (3′,4′,5,7-tetrahydroxyflavone) [3, 4].

Substance (3) — $C_{21}H_{18}O_{12}$, mp 108-110°; λ_{max}^{EtOH} 266, 282, 350 nm, was identified as kaempferol 3-O-glucuronide.

Their IR spectra contained absorption bands of hydroxy groups (3250-3490 cm^{-1}), of the carbonyl of a γ-pyrone (1670-1665 cm^{-1}), and of aromatic C=C bonds. The mobilities of the substances in TLC and their IR spectra (bands of the C–O vibration of glycosides in the 1000-1100 cm^{-1} region) showed the glycosidic nature of the compounds isolated.

The acid hydrolysis of compound (**3**) yielded kaempferol and *D*-glucuronic acid. Acetylation of substance (**3**) with acetic anhydride in pyridine gave a hexaacetate with the composition $C_{33}H_{30}O_{18}$ (M^+ 714), mp 79-80°C [5].

Substance (4) — $C_{22}H_{22}O_{10}$, mp 218-220°, λ_{max}^{EtOH} 264-336 nm, which is characteristic for isoflavone derivatives, was identified as sissotrin (biochanin-A-7-O glucopyranoside).

Its PMR spectrum (in Py-d_5) showed the signals of protons at 3.73 (s, OCH_3), 4.00-4.60 (protons of the carbohydrate moiety), 5.68 (d, 6.0 Hz, H-1″), 6.60 (d, 2.0 Hz, H-6), 6.67 (d, 2.0 Hz, H-8), 6.98 (d, 9.0 Hz, H-3′, H-5′), 7.66 (d, 9.0 Hz, H-2′, H-6′), 8.05 (s, H-2), 13.43 ppm (br.s, 5-OH).

On acid hydrolysis, glycoside (**4**) gave biochanin-A (5,7-dihydroxy-4′-methoxyisoflavone, $C_{16}H_{12}O_5$, M^+ 284, mp 213-214°C) and *D*-glucose.

The acetylation of substance (**4**) with acetic anhydride in pyridine gave a pentaacetate with the composition $C_{32}H_{32}O_{15}$, mp 204-206°C, the mass spectrum of which contained, in addition to the peak of the molecular ion with *m/z* 972, intense peaks of fragmentary ions of acetylated tetraacetylglucose with *m/z* 331, 329, 271, and 169 [6].

This is the first time that compounds (**1-4**) have been isolated from *Cicer mogoltavicum*.

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