pressions of the melting points of mixtures with authentic specimens permitted us to identify the substances isolated as quercetin (I), formononetin (II), daidzein (III), kaempferol 3-glucoside (IV), quercetin 3-galactoside (V), and formononetin 7-glucoside (VI).

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FLAVONOIDS OF Cicer songoricum

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With the aim of finding the most promising species of the Cicer (chick-pea) genus as sources of flavonoid compounds, we have studied the chemical composition of C. songoricum Stenh. ex DC., family Fabaceae (Leguminosae).

In the epigeal part of the wild food plant C. songoricum growing on the mountain ranges of Central Tadzhikistan we have detected ten substances of flavonoid and isoflavonoid nature.

The comminuted raw material was exhaustively extracted with 96% ethanol in an apparatus of the Soxhlet type. The alcoholic extract was evaporated to an aqueous residue, and this was treated successively with chloroform and ethyl acetate. The concentrated chloroform and ethyl acetate extracts were chromatographed on columns of polyamide sorbent using as eluents mixtures of chloroform and ethanol and of water and ethanol with increasing concentrations of the latter.

Substances (I)-(IV) were isolated from the chloroform extract and (V)-(X) from the ethyl acetate extract:

Substance I – formononetin $C_{16}H_{12}O_4$, mp 260-262°, λ_{max} 304, 251, 240 nm;

Substance II – biochanin A $C_{16}H_{12}O_5$, mp 213-214°, λ_{max} 330, 263 nm;

Substance III – daidzein $C_{15}H_{10}O_4$, mp 318-320°, λ_{max} 305, 250, 239 nm;

Substance IV – pratensein $C_{16}H_{12}O_6$, mp 273-274°, λ_{max} 283, 260 nm;

Substance V – kaempferol $C_{16}H_{10}O_6$, mp 275-277°, λ_{max} 370, 296, 265 nm;

Substance VI – isorhamnetin $C_{16}H_{12}O_7$, mp 305-307°, λ_{max} 371, 254 nm;

Substance VII – ononin (formononetin 7-O-β-D-glucopyranoside) $C_{22}H_{22}O_9$, mp 210-212°, $[\alpha]_D^{20}$ −25.3° (c 0.3; methanol), λ_{max} 260 nm;

Substance VIII – biochanin A 7-O-β-D-glucopyranoside $C_{22}H_{22}O_{10}$, mp 208-210°, $[\alpha]_D^{20}$ −24.4° (c 0.4; methanol), λ_{max} 323, 262 nm;

Substance IX – astragalin (kaempferol e-O-β-D glucopyranoside) $C_{21}H_{22}O_{11}$, mp 178-180°, $[\alpha]_D^{20}$ −69.0° (c 0.4; ethanol), 350, 267 nm;

Substance X – isorhamnetin 3-O-β-D-glucopyranoside $C_{22}H_{22}O_{12}$, mp 170-172°, $[\alpha]_D^{20}$ −26.3° (c 0.5; ethanol), λ_{max} 355, 255 nm.

The structures of all the substances isolated were confirmed by the results of elementary analysis, UV and IR spectroscopies, and a study of the products of acid, alkaline, and enzymatic hydrolyses, and also by comparison with authentic specimens and literature information [1].

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FLAVONOIDS OF THE LEAVES OF Colchicum speciosum

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Chemical investigations of Colchicum speciosa Stev. have related mainly to its alkaloid composition [1-3]. We have now studied the flavonoid composition of the leaves of C. speciosum Stev. gathered in the middle of May, 1989, in the environs of the village of Krasnaya Polyana, Krasnodar' territory, in the active vegetation phase.

The comminuted air-dry material (1 kg) was exhaustively extracted with 70% ethanol. The combined extracts were concentrated under vacuum to an aqueous residue, and this was treated with chloroform to eliminate ballast substances. The flavonoids were extracted from the purified aqueous solution with ethyl acetate.

To isolate individual compounds, the total flavonoids were deposited on a column of polyamide sorbent and were eluted successively with chloroform and mixtures of alcohol and chloroform. As a result, four substances of flavonoid nature were isolated and identified:

Substance (I) – $C_{15}H_{10}O_5$, light yellow crystals, mp 341-343°C. UV spectrum: 335, 270 nm; identified as apigenin [4].

Substance (II) – $C_{15}H_{10}O_6$; yellow crystals, mp 329-330°C. UV spectrum: 350, 265 nm; identified as luteolin [4].

Substance (III) – $C_{21}H_{20}O_{10}$, light yellow crystals, mp 225-227°C. UV spectrum: 335, 270 nm.

Substance (IV) – $C_{21}H_{20}O_{11}$, light yellow crystlas, mp 266-268°C. UV spectrum: 350, 255 nm.

Substances (III) and (IV) were glycosides, and, as the result of acid hydrolysis, substance (III) yielded apigenin and D-glucose, and substance (IV) luteolin and D-glucose. It was established by UV spectroscopy with diagnostic additives that the carbohydrate residues in them were attached to the hydroxyls in the C-7 positions. Substance (III) was apigenin 7-O-β-D-glucoside (cosmossiin), and substance (IV) was luteolin 7-O-β-D-glucoside (cynaroside) [4]. The flavonoids isolated were identified from the results of elementary analysis and of UV and IR spectroscopy, and also from the absence of melting point depressions of mixtures of authentic samples with the compounds isolated. Thus, two flavonoid glycosides (cynaroside and cosmossiin) and two aglycons (epigenin and luteolin) have been isolated from leaves of Colchicum speciosa Stev.

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