FLAVONOIDS OF *Trifolium strepens*

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Continuing [1] an investigation of the flavonoid compounds from *Trifolium strepens* Grantz [2], family Fabaceae, collected in the environs of Kavkazskie Mineral'nye Vody, Stavropol' krai, using a published method [3] we have isolated in the individual state and identified nine flavonoid compounds.

The individual compounds were isolated by preparative chromatography on paper (Filtrak FN-3, ascending chromatography) and by column chromatography on polyamide.

Substance 1 — $C_{22}H_{22}O_9$, mp 210-212°C (from ethanol), $[\alpha]_D^{20} - 25.3°$ (c 0.40; methanol), λ_{max} 251, 258, 301 nm — was formononetin 7-O-β-D-glucopyranoside (ononin).

Substance 2 — $C_{22}H_{22}O_{10}$, mp 208-210°C (from ethanol), $[\alpha]_D^{20} - 24.4°$ (c 0.41; methanol), λ_{max} 262, 323 nm — was 5,7-dihydroxy-4'-methoxyisoflavone 7-O-β-D-glucopyranoside (biochanin A 7-glucoside).

Substance 3 — $C_{27}H_{30}O_{16} \cdot 2H_2O$, mp 187-189°C (from ethanol), $[\alpha]_D^{20} - 12.5°$ (c 0.68; methanol), λ_{max} 256, 363 nm — was quercetin 3-rutinoside (rutin).

Substance 4 — $C_{21}H_{20}O_{12}$, mp 232-235°C (from ethanol), $[\alpha]_D^{20} - 60°$ (c 0.15; methanol), λ_{max} 259, 365 nm — was identified as quercetin 3-O-β-D-galactopyranoside (hyperoside).

Substance 5 — $C_{21}H_{20}O_{12}$, mp 238-240°C (from methanol), $[\alpha]_D^{20} - 69.2°$ (c 0.10; methanol), λ_{max} 255, 362 nm — was 3,3',4',5,7-pentahydroxyflavone 3-O-β-D-glucopyranoside (isoquercitirin).

Substance 6 — $C_{16}H_{12}O_5$, mp 212-214°C (from methanol), λ_{max} 263 nm — was 5,7-dihydroxy-4'-methoxyisoflavone (biochanin A).

Substance 7 — $C_{15}H_{10}O_5$, mp 291°C (from methanol), λ_{max} 262 nm — was identified as 4',5,7-trihydroxyisoflavone (genistein).

Substance 8 — $C_{16}H_{12}O_7$, mp 305-307°C (from ethanol), λ_{max} 254, 271 nm — was 3,4',5,7-tetrahydroxy-3'-methoxyflavone (isorhamnetin).

Substance 9 — $C_{15}H_{10}O_7$, mp 310-313°C (from methanol), λ_{max} 256, 370 nm — was 3,3',4',5,7-pentahydroxyflavone (quercetin).

The structures of all the compounds isolated were confirmed by the results of elementary analysis, UV and IR spectroscopy, and by a study of the products of acid, alkaline, and enzymatic hydrolysis, and also by comparison with authentic samples.

LITERATURE CITED

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