C-GLYCOSIDES OF *Crataegus curvisepala*

A. A. Titova and V. S. Batyuk,

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We have previously reported on the isolation from *Crataegus curvisepala* Lindm., (family Rosaceae) of several classes of flavonoid compounds: flavones, flavonols, C-glycosides of flavonoid compounds, and C,O-biosides [1-3]. Continuing investigations of the leaves of *C. curvisepala* we have isolated another three flavonoid C-glycosides, designated as substances (I-III).

The dried and finely comminuted leaves of *Crataegus curvisepala* were extracted with 96% ethanol. After the evaporation of the ethanol, the extract was purified by treatment with chloroform to remove chlorophyll and waxes and was chromatographed on a column of polyamide with elution by ethanol–chloroform (2:8). The first three zones contained substances identified previously. Paper chromatography in the 5% acetic acid system of the fourth zone revealed substances (I-III) (R_f 0.08, 0.18, and 0.03, respectively; Leningrad medium paper). To isolate the individual substances, the fourth fraction was rechromatographed on a column of polyamide sorbent with elution by ethanol–chloroform (2:8) and (3:7). Substances (I-III) were obtained from the evaporated eluates after crystallization.

Substance (I): $C_{21}H_{20}O_{11}$, mp 260-262°C. UV spectrum (nm); $\lambda_{max}^{C_2H_5OH}$ 347, 271, $\lambda_{max}^{+CH_3COONa}$ 390, 278, $\lambda_{max}^{+CHO_3ONa}$ 405, 269, $\lambda_{max}^{+AlCl_3}$ 426, 278, $\lambda_{max}^{+H_3BO_3+CHCOONa}$ 372, 265. Its physicochemical properties and the results of a comparison with an authentic sample enabled substance (I) to be identified as 3',4',5,7-tetrahydroxyflavone 8-C-β-D-glucopyranoside (orientin).

Substance (II): $C_{21}H_{20}O_{11}$, mp 227-231°C. UV spectrum (nm): $\lambda_{max}^{C_2H_5OH}$ 347, 270, $\lambda_{max}^{+CH_3COONa}$ 390, 277, $\lambda_{max}^{+CH_3ONa}$ 405, 269, $\lambda_{max}^{+AlCl_3}$ 425, 277, $\lambda_{max}^{+H_3BO_3+CH_3COONa}$ 372, 265. From its physicochemical properties, the results of a chemical investigation, and a comparison with an authentic sample, substance (II) was identified as 3',4',5,7-tetrahydroxyflavone 6-C-β-D-glucopyranoside (homoorientin).

Substances (I) and (II) are isomeric compounds. When substance (I) was boiled in 5% hydrochloric acid for 1.5 h, a compound identified as orientin was formed, which is an additional proof of the structure of this substance. Orientin and homoorientin have been detected previously in *Crataegus monogina* and *C. pentagina* [4]. This is the first time that these flavonoid C-glycosides have been isolated from the hawthorn species investigated here.

LITERATURE CITED

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