GLYCOFLAVONOIDS OF Crataegus monogina AND C. pentagina

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We have previously isolated from the leaves of Crataegus monogina L. two flavonoids provisionally called substances H and D [1, 2]. We have also isolated two flavonoids – (I) and (II) – from the leaves of Crataegus pentagina.

These substances are mobile on chromatography in aqueous systems, are not hydrolyzed by 20% sulfuric acid on being boiled for 4 h, are optically active, and readily isomerize on being boiled in dilute acids, which permits the assumption that they are C-glycosides.

Substance H, composition $C_{21}H_{20}O_{11}$, mp 255-258°C, $[\alpha]_D^{20}+22°$ (c 0.1; pyridine). UV spectrum: λ_{max}^{init} 255, 271,* 348 nm.

Substance D, mp 228-230°C, $[\alpha]_D^{20}+54°$ (c 0.1; pyridine). UV spectrum: λ_{max}^{init} 256, 270,* 349 nm.

Substance (I), composition $C_{21}H_{20}O_{11}$, mp 260-262°C, $[\alpha]_D^{20}+22°$ (c 0.1; pyridine). UV spectrum: λ_{max}^{init} 256, 271,* 348 nm.

Substance (II), $C_{21}H_{20}O_{11}$, mp 229-231°C $[\alpha]_D^{20}+28°$ (c 0.1; pyridine). UV spectrum: λ_{max}^{init} 255, 270,* 349 nm.

The acetates of substances H, (I), and (II) had the composition $C_{37}H_{36}O_{11}$, and mps 200-202°C, 201-203°C, and 138-141°C, respectively.

From the products of the acid hydrolysis of the flavonoids H, D, (I), and (II) with hydriodic acid in liquid phenol [3], one and the same aglycone was obtained with the composition $C_{15}H_{10}O_6$, mp 325-327°C, UV spectrum: λ_{max}^{init} 254, 267,* 349 nm. The aglycone was identified by qualitative reactions, UV spectra, and chemical and spectral characteristics as luteolin (3',4',5,7-tetrahydroxyflavone). Glucose was found in the products of hydrolysis by Kiliani's method [4]. From its physicochemical properties, and the results of chemical, UV- and IR-spectral, and chromatographic investigations, substances H and (I) were identified as 8-C-glucopyranosyl-3',4',5,7-tetrahydroxyflavone (orientin) and (II) was identified as 6-C-glucopyranosyl-3',4',5,7-tetrahydroxyflavone (homoorientin).

The IR spectrum of compound D shows a maximum at 1740 cm^{-1}, which is characteristic for an ester grouping, and which disappears after the saponification of the substance. This is the first time that all these substances have been isolated from Crataegus spp.

LITERATURE CITED

1. N. Nikolov and V. Ivanov, Farmatsiya (Sofiya), 19, No. 6, 32 (1969).
2. N. Nikolov, Farmatsiya (Sofiya), 21, No. 4, 42 (1971).
3. J. D. Ramanathan and T. R. Seshadri, Current Sci., 29, 131 (1960).
4. H. Kiliani, Ber., 63, 2866 (1930).

* Shoulder.

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