XANTHONE C-GLYCOSIDES OF Hedysarum denticulatum

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The leaves of Hedysarum denticulatum (140 g) were extracted three times with acetone–water (1 : 1), the combined extracts were evaporated to half bulk, and the xanthone glycosides were repeatedly extracted with butanol. The butanolic extracts were evaporated to dryness, and the residue was dissolved in dioxane–water (1 : 1). On standing, the solution deposited substance (I). The mother liquor of the separation of substance (I) was transferred to a column containing cellulose. Elution was performed with 5% acetic acid. The first fractions contained substance (I), and from the subsequent fractions substance (II) was isolated.

Substance (I), $C_{19}H_{18}O_{11} \cdot {}^1/_2\ H_2O$, mp 259°C (decomp.); λ_{max} 241, 259, 318, 369 nm. NMR spectrum in DMSO: s 13.79 ppm – proton of an OH group in position 1; s 7.37 ppm – H-8; s 6.85 ppm – H-5; s 6.36 ppm – H-4; d 4.64 and 4.54 ppm (J = 10 Hz) signal of the anomeric center of β-glucose attached by a C–C glycosidic bond to the aglycone. On the basis of its UV, IR, and NMR spectra, substance (I) was identified as mangiferin (2-C-β-glucopyranosyl-1,3,6,7-tetrahydroxyxanthone).

Substance (II), mp 240°C (decomp.), like substance (I) is a xanthone C-glycoside. The NMR spectrum of this compound lacks the signal of a proton in position 4 and has a singlet at 6.22 ppm due to the proton in position 2. Thus, the carbohydrate substituent in this compound is present in position 4 and the substance that we isolated is isomangiferin (4-C-β-D-glucopyranosyl-1,3,6,7-tetrahydroxyxanthone).

We have made a quantitative determination of the mangiferin and isomangiferin from the leaves of H. denticulatum by a spectrophotometric method after chromatography of the extract in a thin layer of cellulose with 15% acetic acid as the mobile phase. The leaves of the plant investigated collected at the beginning of fruit-bearing, contained 1.7% of mangiferin and 0.6% of isomangiferin [1, 2].

LITERATURE CITED

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