

PHENOLIC COMPOUNDS OF HEDYSARUM SACHALINENSE AND H. BRANDTII

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By chromatography on a polyamide sorbent, we have isolated from an ethanolic extract of the herb Hedysarum sachalinense B. Fedtsch, three individual substances of a phenolic nature.

Substance I, $C_{19}H_{18}O_{11}$. Mp 258–262° C, $[\alpha]_D^{+42}$ (c 0.45, dimethylformamide), λ_{max} 364, 315, 257, and 240 $m\mu$, R_f 0.37 in 30% acetic acid. This substance is not hydrolyzed by dilute mineral acids, and its hydrolysis by Kiliani's method leads to the formation of glucose with a small amount of arabinose. The presence of a glycosyl substituent in the substance is confirmed by the NMR spectrum (multiplet with δ 3.71 ppm having an intensity of six proton units) [1]. The demethylation of substance I with hydriodic acid in acetic anhydride yielded the aglycone $C_{13}H_8O_6$ with decomp. p. 210–215° C, λ_{max} 364, 315, 258, and 241 $m\mu$. The melting point of the acetate was 219–220° C. The constants of the aglycone correspond to those of 1, 3, 6, 7-tetrahydroxyxanthone [2].

A comparison of the constants of substance I (mp, UV and IR spectra) with 2-C- β -D-glucopyranosyl-1, 3, 6, 7-tetrahydroxyxanthone (mangiferin) showed that they were identical [3].

Substance II, $C_{21}H_{20}O_{12} \cdot H_2O$. Mp 237–239° C, λ_{max} 359 and 254 $m\mu$, $[\alpha]_D^{-43}$ (c 0.32, dimethylformamide).

On the basis of the hydrolysis products (quercetin and glucose), the UV and IR spectra, and a direct comparison, substance II was identified as hyperoside.

Substance III, $C_{20}H_{18}O_{11} \cdot 1.5 H_2O$. Mp 242–246° C, $[\alpha]_D^{-15.2}$ (c 0.08, ethanol), λ_{max} 360 and 258 $m\mu$. The hydrolysis of substance III with 3% H_2SO_4 gave quercetin and arabinose. The constants of substance III corresponded to those of quercetin 3- β -L-arabofuranoside (polystachoside) [4]. A direct comparison of substance III and polystachoside (IR spectra, absence of a depression of the melting point of a mixture) confirmed their identity.

From the herb H. Brandtii Traut. et Mey we have isolated and identified mangiferin and hyperoside.

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