LUTEOLIN AND ITS C-MONOGLYCOSIDES FROM *Lupinus polyphyllus*

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The leaves of *Lupinus polyphyllus* Lindley, a wild-growing biennial plant, in the flowering phase were fixed with steam and dried in a thermostat at 55-60°C. The dry comminuted material (2 kg) was repeatedly extracted with 70% ethanol at room temperature by the steeping method, and the extract was distilled in vacuum. The concentrated residue was treated with 600 ml of hot water and filtered and the resulting filtrate was extracted successively with diethyl ether, yielding fraction 1, and ethyl acetate, yielding fraction 2.

Chromogenic reagents [1] showed the presence in fraction 1 of flavonoid aglycones and glycosides and in fraction 2 of glycosides. Then fraction 1 was chromatographed on a column of polyamide: the flavonoid glycosides were eluted with 33% ethanol, and the aglycones with 60% ethanol. The purified combined aglycones were separated on a polyamide column with ethanol—chloroform [2] and yielded (8% on the mixture) substance A, $C_{15}H_{10}O_6$, M^+ 286 (obtained on a Varian MAT-311 instrument).

From the products of alkaline degradation, analyses of spectral characteristics, and chromatographic behavior with a marker, substance A was identified as luteolin [3, 4]. Fraction 2 was separated on polyamide sorbent by fractionation with 33% ethanol. This yielded substance B, $C_{21}H_{20}O_{11}$. On the basis of characteristics of the UV spectra, the results of a study of the products of Kiliani hydrolysis and alkaline degradation, substance B was found to be a luteolin C-monoglucoside. The ratio of aglycone to sugar was 58:32. The IR spectrum of substance B was identical with the IR spectrum of orientin [5]. Substances A and B were dried in vacuum over phosphorus pentoxide at 100°C for 12 h.

Substance C was accumulated by preparative chromatography on FN 8 paper in the BAW (4:1:5) and 20% CH_3COOH systems. The UV spectra and bathochromic shifts and the products of Kiliani hydrolysis and alkaline degradation indicated the identity of substances C and B. However, these substances differed in their R_f values in various solvent systems: the R_f value of substance B in the BAW system was 0.29 and in the 20% CH_3COOH system 0.27, the R_f values of substance C in these systems being 0.22 and 0.32, respectively. This permits substance B to be identified as orientin and C as homoorientin [6].

The amounts of free luteolin, orientin, and homoorientin in the leaves of *Lupinus polyphyllus* were 0.22, 7.88, and 6.55 mg/g of dry substance, respectively.

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