

LUTEOLIN GLYCOSIDES IN SOME PLANTS OF THE FAMILY COMPOSITAE

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As reported previously [1], the presence of luteolin glycosides is characteristic for plants of the family Compositae. We have studied various species of this family growing in the northern Caucasus for their content of these compounds. When ethanolic extracts of the epigeal parts of the plants were subjected to acid hydrolysis, luteolin was found in the hydrolysates of Centaurea ciscaucasica Sosn., C. declinata MB, C. dealbata Willd., C. cheiranthifolia Willd., C. Maleevii (Sosn.) Sosn., Cicerbita bourgaei Baiss. Beauverd, Lapsana communis L., Tragopogon dasyrhynchus Artemcz., Telekia speciosa (Schreb.) Baumg., and Hieracium Schmalhausense Litw. et Zahn.

Using chromatography on Kapron powder and gel filtration through Sephadex G-25 we obtained the luteolin glycosides.

Substance I. Isolated from Centaurea ciscaucasica Sosn., Cicerbita bourgaei Bass. Beauverd, Hieracium Schmalhausense Litw. et Zahn., Telekia speciosa (Schreb.) Baumg., and Lapsana communis L., I forms pale yellow crystals with the composition $C_{24}H_{20}O_{11}$, mp 250 and 255° C; $\lambda_{\text{max}}^{\text{CH}_3\text{OH}}$ 350 and 255, shoulder at 265 m μ , R_f 0.48 (butan-1-ol- $\text{CH}_3\text{COOH}-\text{H}_2\text{O}$, system 1), and 0.10 (15% solution of CH_3COOH); mp of the acetyl derivative 235° C. On acid hydrolysis it formed one mole of D-glucose and luteolin. A mixture with authentic luteolin 7- β -D-glucopyranoside gave no depression of the melting point.

Substance II. Isolated from the flowers of Tragopogon dasyrhynchus, II forms greenish yellow acicular crystals with mp 220° C, R_f 0.36 (system 1) and 0.27 (10% solution of CH_3COOH). UV spectrum: $\lambda_{\text{max}}^{\text{CH}_3\text{OH}}$ 355, 270, and 252 m μ . On acid hydrolysis (20% H_2SO_4 , 3.5 hr) it yielded luteolin, D-glucose, and D-galactose. According to UV spectroscopy, both sugar residues are present in position 7. On stepwise hydrolysis with 10% H_2SO_4 , after 1.5 hr D-glucose was split off and a luteolin monogalactoside with R_f 0.17 (system 1) was formed. On further hydrolysis, luteolin and D-galactose were obtained. Thus, substance II can be characterized as luteolin 7-O-D-glucogalactoside, with properties similar to those of the luteolin 7-glucogalactoside isolated from Capsella bursa pastoris [2].

Substance III. Obtained from the flowers of Centaurea cheiranthifolia, III forms yellow crystals with mp 192° C. According to UV spectroscopy ($\lambda_{\text{max}}^{\text{CH}_3\text{OH}}$ 347, 265, and 255 m μ) in the presence of ionizing and complex-forming additives it contains a sugar residue on carbon atom 7. On acid hydrolysis (5% H_2SO_4 , 3 hr) it gave luteolin, D-glucose, and L-rhamnose. On hydrolysis with 1% H_2SO_4 for 1 hr, rutinose was found in addition to glucose and rhamnose. In its physicochemical properties and R_f value, substance III corresponds to the luteolin 7-rutinoside from Capsella bursa pastoris [3]. A sample of this was kindly given to us by W. Olechnowicz-Stepien.

This is the first time that luteolin 7-glucogalactoside and luteolin 7-rutinoside have been found in the family Compositae.

REFERENCES

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