FLAVONOL GLYCOSIDES OF Eucalyptus viminalis

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UDC 547.972:547.918

The leaves of Eucalyptus viminalis were extracted successively with petroleum ether, chloroform, ethyl acetate, and ethanol. The ethyl acetate extract was evaporated and chromatographed on polyamide sorbent. Elution with 30% ethanol gave substance 1. The evaporated ethanolic extract was chromatographed on polyamide sorbent and eluted with a mixture of chloroform and methanol (5-50% of methanol).

The separation of the flavonoids was monitored by chromatography of the fractions on paper in 15% acetic acid. Substances 2 and 3 were obtained.

Substance 1, $C_{21}H_{20}O_{11}$, mp 185-187°C, $[\alpha]_D$ − 30° (c 0.3, dimethylformamide), λ_{max} 255, 257 nm. Hydrolysis with 5% sulfuric acid gave the aglycone $C_{15}H_{10}O_7$ with mp 302-307°C, identified as quercetin, and L-rhamnose, identified by thin-layer chromatography in silica gel [mobile phase acetone−methanol−chloroform−water (8 : 1 : 1 : 0.5)].

On the basis of physicochemical constants and UV, IR, and NMR spectra, substance I was identified as quercitrin (quercetin 3-α-L-rhamnopyranoside) [1].

Substance 2, $C_{21}H_{20}O_{12} \cdot 1H_2O$, mp 218-222°C, λ_{max} 360, 257 nm $[\alpha]_D$ 53.5° (c 0.5, dimethylformamide). The hydrolysis of substance 2 gave quercetin as the aglycone and D-glucose, identified by the method described above. The NMR spectrum of substance 2 has signals at 7.32 ppm (2H), C-2',6'; 6.78 ppm (1H), C-5'; doublets at 6.36 (1H), and 6.08 ppm (1H), C-8 and C-6; 5.70 (1H), anomeric proton of β-glucose; and a multiplet at 3.45 (6H), glucose protons. The attachment of the glucose at position 3 of the quercetin was established by UV spectroscopy. Some constants and properties of substance 2 correspond to those of isoquercitrin [2], but it differs from the latter in its specific rotation and its R_f value in 15% acetic acid and is probably its spatial isomer hirsutrin (quercetin 3-β-D-glucopyranoside) [3].

Substance 3, $C_{27}H_{30}O_{16} \cdot 2H_2O$, mp 189-190°C, was identified as rutin (quercetin 3-rutinoside) on the basis of the products of acid hydrolysis and the IR, UV, and NMR spectra and by a direct comparison with an authentic sample.

LITERATURE CITED

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All-Union Scientific-Research Institute for Medicinal Plants. Translated from Khimiya Prirodnykh Soedinenii, No. 6, pp. 764-765, November-December, 1970. Original article submitted October 25, 1970.