A FLAVONE GLYCOSIDE FROM Vicia balansae

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The isolation from the epigeal part of Vicia balansae of five compounds has been reported previously. The structures of four of them were described [1].

We now give the results of an investigation of the fifth compound. The air-dry raw material (1 kg) was exhaustively extracted with 60% ethanol. The extract, concentrated to 1/3 of its original volume, was treated successively with chloroform, ethyl acetate, and n-butanol. On concentration, the butanolic fraction deposited a precipitate containing six flavonoid compounds of which the main one proved to be substance (V). For its isolation, the precipitate was deposited on a column of polyamide sorbent and elution was performed successively with water and increasing concentrations of aqueous ethanol.

Substrate (V) formed pale yellow crystals with mp 204-209°C, $[\alpha]_D^{20}$ −63.88 ± 2° (c 1.34; pyridine); R_f 0.15 in the butan-1-ol−CH_3COOH−H_2O (4 : 1 : 5) system and 0.10 in 15% CH_3COOH. λ_{max}, nm: CH_3OH−269, 238; CH_3COONa−268, 345; 387, 390; H_3BO_3 + CH_3COONa − 269, 342; $AlCl_3$ − 278, 348, 383; $AlCl_3$ + HCl − 255, 277, 346, 382; CH_3ONa − 259, 394 nm. According to the PMR spectroscopy of the acetyl derivative in $CDCl_3$, the substance was a diglycoside attached to the aglycone by a β-glycosidic bond. In the 1.98-2.24 ppm region (δ scale) there were the signals of 10 acetyl groups (3 OH), and at 4.14 and 5.20 ppm the signals of twelve H atoms of glucose residues. The protons of aromatic rings gave signals at 6.41, 7.15, and 7.51 ppm (H-6, 8; H-5; H-2, 6). Quantitative acid hydrolysis confirmed that the compound was a diglycoside. There were two moles of D-glucose per one mole of aglycone.

The aglycone formed pale yellow crystals with mp 330°C, M^+ 286. It was identified from its physicochemical characteristics (UV and mass spectroscopy, R_f, and the products of alkaline hydrolysis) as luteolin.

The results of the study of the products of stepwise hydrolysis (0.1 N HCl, 120 min, 100°C) showed that substance (V) was luteolin 4',7-di-O-β-D-glucopyranoside.

LITERATURE CITED

1. O. A. Andreeva, Khim. Prir. Soedin., 720 (1980).

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