

Substance (II), mp 206-208°C (chloroform-acetone), $\nu_{\text{max}}^{\text{CH}_3\text{OH}}$: 262, 269, 358 nm, melting point of the tetraacetate 159°C (chloroform). According to its PMR and UV spectra, (II) differed from (I) by the presence of a free OH group in position 7 and was 3',4',5,7-tetrahydroxy-3,6-dimethoxy-flavone - axillarin [4-6].

Substance (III), mp 160°C (acetone), M^+ 388, $\nu_{\text{max}}^{\text{CH}_3\text{OH}}$ 254, 279, 345 nm. Analysis of UV and mass spectra and their comparison with literature information [8, 9] enabled substance (III) to be identified as 5-hydroxy-3,3',4',6,7-pentamethoxyflavone - artemisetin.

Paper chromatography with markers showed the presence of caffeic and chlorogenic acids in the plant.

This is the first time that all the above substances have been detected in Ajania fruticulosa.

LITERATURE CITED

1. Flora of the USSR [in Russian], Moscow-Leningrad, Vol. 26 (1961), p. 406.
2. E. T. Bryant, J. Amer. Pharm. Assoc. Ser. Ed., 39, No. 8, 481 (1950).
3. E. L. Ghisalberti, P. S. Jeffries, and C. J. Stacey, Aust. J. Chem., 20, 1049 (1967).
4. E. Rodrigues, N. J. Carman, G. Van der Velze, I. H. Reynolds, T. J. Mabry, M. A. Irwin, and T. A. Geisman, Phytochem., 11, No. 12, 3509 (1972).
5. A. O. Taylor and E. Wong, Tetrahedron Lett., 41, 3675 (1965).
6. W. Herz, L. Farkas, V. Sudarsaman, H. Wagner, L. Horhammer, and R. Ruger, Chem. Ber., 99, 3539 (1966).
7. T. J. Mabry, K. R. Markham, and M. B. Thomas, The Systematic Identification of Flavonoids, Springer, New York (1970).
8. P. Tunmann and O. Isaak, Angew. Chem., 67, 708 (1955).
9. W. Herz, J. Org. Chem., 26, 3014 (1961).

TRIFOLIN FROM *Euphorbia condylocarpa*

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We have previously reported the isolation of a flavanone 7-glucoside from the herbage and flowers of *Euphorbia condylocarpa* M. B. [1]. On further separation of the combined flavonoids on a column containing polyamide sorbent and by fractional crystallization, we isolated an individual substance $C_{21}H_{20}O_{11}$, mp 229-231°C, R_f 0.76 (15% acetic acid system).

The positive cyanidin reaction of the substance and its UV spectrum with absorption maxima in the 258 and 364 nm regions showed its flavonoid nature. The orange pigment formed in the cyanidin reaction of the substance did not pass into octanol.

Hydrolysis of the substance with 3% sulfuric acid yielded 63% of an aglycone $C_{15}H_{10}O_6$ with mp 271-273°C, and D-galactose was identified in the acid hydrolyzate by paper chromatography. Enzymatic hydrolysis with a preparation from *Aspergillus oryzae* gave the same products.

On the basis of UV and IR spectroscopy and the results of alkaline hydrolysis, the aglycone was identified as kaempferol. A spectral analysis of the aglycone and of the glycoside in the UV region with ionizing and complex-forming reagents showed that the sugar component in the glycoside under investigation was present at C_3 of the flavonoid aglycone [2], and the glycoside isolated is kaempferol 3-O- β -D-galactopyranoside (trifolin).

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LITERATURE CITED

1. Yu. V. Roshchin, A. L. Shinkarenko, and E. T. Oganessian, *Khim. Prirodn. Soedin.*, 472 (1970).
2. V. I. Litvinenko and N. P. Maksyutina, *Khim. Prirodn. Soedin.*, 420 (1965).

LUTEOLIN 5-O- β -L-GALACTOSIDE FROM

Dracocephalum nutans

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We have previously isolated cosmosinin and cynaroside from the herb *Dracocephalum nutans* L. [1]. When an ethanolic extract was chromatographed on cellulose, 85% ethanol yielded a flavonoid which we have called DN₃.

The substance DN₃, C₂₁H₂₀O₁₁, had mp 220-222°C, R_f 0.18 (15% acetic acid), ν_{\max} (ethanol) 352, 269, 252 nm. Acid hydrolysis (5% sulfuric acid, 3 h) gave the aglycone with mp 326-328°C, R_f 0.46 (60% acetic acid), ν_{\max} (ethanol): 355, 268, 252 nm. On the basis of the results of physicochemical and spectral investigations in comparison with an authentic sample, the aglycone was identified as luteolin [2]. L-Galactose, identified by paper chromatography, was found in the hydrolyzate. The results of IR spectroscopy and enzymatic hydrolysis show the pyranose form of the sugar and the presence of a β -glycosidic bond [3].

On the basis of the facts given above and the results of UV spectroscopy with complex-forming and ionizing additives, the substance DN₃ can be characterized as lutiolin 5-O- β -L-galactoside.

LITERATURE CITED

1. A. A. Shamyryna, V. A. Peshkova, and N. I. Shergina, *Khim. Prirodn. Soedin.*, 255 (1975).
2. T. J. Mabry, K. R. Markham, and M. B. Thomas, *The Systematic Identification of Flavonoids*, Springer, New York (1970).
3. I. P. Kovalev and E. V. Titov, *Infrared Absorption Spectra of some Groups of Natural Compounds* [in Russian], Khar'kov (1966).

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