UDC 547.972

FORTUNELLIN FROM ACINOS THYMOIDES

T. A. Sergienko, V. I. Litvinenko, and L. S. Kazarnovskii

Khimiya Prirodnykh Soedinenii, Vol. 4, No. 5, p. 320, 1968

From the herb Acinos thymoides Moench., in addition to flavanone glycosides [1], we have isolated a flavone compound with the composition $C_{28}H_{32}O_{14}$, mp 210°-212°C; $[\alpha]_D^{20}$ −90.0° (c 0.5; dimethylformamide); R_f 0.37 (15% CH_3COOH); R_f 0.60 [BAW(4 : 1 : 5)]; $\lambda_{max}^{ethanol}$ 327, 270.

The substance gives a positive cyanidin reaction and reduces Fehling's solution only after acid hydrolysis.

According to the results of acid hydrolysis and spectroscopy, the compound is a bioside of acacetin, and its carbohydrate chain, consisting of D-glucose and L-rhamnose, is attached in position 7.

The sequence of attachment of the sugars was established on the basis of stepwise acid hydrolysis, which gave a monoglycoside of acacetin with mp 252°-253° C; $[\alpha]_D^{20}$ −65.0° (c 0.1; dimethylformamide), identical with tilianin. Consequently, the D-glucose is directly attached to the aglycone and the L-rhamnose is attached to the second atom of the D-glucose, which is confirmed by periodate-nitric acid oxidation.

A polarimetric analysis showed that the D-glucose has the β-configuration of the glucosidic link and the pyranose form and the L-rhamnose have the α-configuration of the link and the same form.

To confirm the structure of the substance, we carried out the iodine oxidation of a flavanone glycoside—poncirin—with the bond between the rhamnose and the glucose in the 1-2 position. The compound obtained was shown to be identical with the flavone under investigation.

Thus, the flavone bioside of Acinos thymoides is acacetin 7-(β-D-glucopyranosyl-2-α-L-rhamnopyranoside), i.e., fortunellin [2], isolated from a plant of our domestic flora for the first time.

REFERENCES

1. T. A. Sergienko, L. S. Kazarnovskii, and V. I. Litvinenko, KhPS [Chemistry of Natural Compounds], 2, 166-172, 1966.
2. T. Matsuno, J. Pharm. Soc. Japan, 78, 1311, 1958.

23 November 1967

Khar'kov Pharmaceutical Institute

Khar'kov Chemical and Pharmaceutical Scientific-Research Institute

UDC 547.972

FLAVONOIDS OF CHIMAPHILA UMBELLATA

A. A. Trubachev and V. S. Batyuk

Khimiya Priridnykh Soedinenii, Vol. 4, No. 5, pp. 320-321, 1968

It has previously been reported that Chimaphila umbellata (L.) Nutt. (common chimphaphila) contains flavonoids [1]. The total flavonoids obtained were separated on a column of Kapron polyamide sorbent [2], the eluting solvents used being distilled water, various concentrations of ethanol, and mixtures of ethanol and chloroform. Three individual flavonoids were obtained. The results of a study of the products of acid and aromatic hydrolysis, alkaline degradation, and UV and IR spectra showed that one of the substances, $C_{21}H_{20}O_{12}$ with mp 241°-243° C, is hyperoside (quercetin 3-β-D-galactopyranoside); the second, $C_{20}H_{18}O_{11}$ with mp 208°-211° C is avicularin (quercetin 3-α-L-arabinoside) [3-5]; and the third, $C_{15}H_{10}O_6$ with mp 275°-277° C, is kaempferol [6].

REFERENCES

1. A. A. Trubachev, collection: Questions of Pharmacognosy [in Russian], Leningrad, 4, p. 176, 1967.
2. V. I. Litvinenko, N. P. Maksyutina, and D. G. Kolesnikov, Med. prom. SSSR, no. 3, 40, 1962.

3. I. P. Kovalev and V. I. Litvinenko, KhPS [Chemistry of Natural Compounds], **1**, 233, 1965.
4. V. I. Litvinenko and N. P. Maksyutina, KhPS [Chemistry of Natural Compounds], 1, 420, 1965.
5. N. F. Komissarenko, V. T. Chernobai, and D. T. Kolesnikov, Med. prom. SSSR, 1, 25, 1965.
6. N. V. Sergeeva, Rast. resursy, 2, no. 4, 536, 1966.

18 March 1968

Perm Pharmaceutical Institute

Khar'kov Chemical and Pharmaceutical Scientific-Research Institute

UDC 547.972

FLAVONOIDS OF THE LEAVES OF POLYGONUM CORIARIUM. I

T. K. Chumbalov and V. B. Omurkamzinova

Khimiya Prirodnykh Soedinenii, Vol. 4, No. 5, p. 321, 1968

From a methanolic extract of the leaves of Polygonum coriarium Grig. by absorption chromatography on polyamide with the use of preparative paper chromatography [with the systems 15% acetic acid and ethyl acetate–formic acid–water (10 : 2 : 3)] we have isolated three flavonoids.

It has been shown by the results of alkaline cleavage, reduction, acid hydrolysis, elementary analysis, spectroscopic investigations in the UV region using ionizing and complex-forming reagents, and IR spectroscopy [1–4] that the first of the substances isolated is quercetin, with mp 312° C, mp of the pentaacetate 194° C, R_f in 15% acetic acid 0.07; the second is avicularin [quercetin 3-(α-L-arabofuranoside)] with mp 216°–217° C, $[\alpha]_D^{22}$ −172.5° (c 0.68; methanol), R_f 0.46; and the third is quercitrin[quercetin 3-(α-L-rhamnofuranoside)] with mp 183°–185° C, $[\alpha]_D^{22}$ −160.6° (c 0.74; methanol), R_f 0.61.

REFERENCES

1. The Chemistry of Flavonoid Compounds, ed., T. A. Geissman, 107, 1962.
2. L. Jurd and R. M. Horowitz, J. Org. Chem., **22**, 1618, 1957.
3. N. P. Kovalev and V. I. Litvinenko, KhPS [Chemistry of Natural Compounds], 1, 233, 1965.
4. V. N. Spiridnov, DAN SSSR, **169**, 126, 1966.

20 March 1968

Kirov Kazakh State University

UDC 577.15/17:582.89

THE ESSENTIAL OIL OF ARTEMISIA LERCHEANA

I. S. Kozhina, V. I. Kovaleva, G. G. Senchenko, and T. V. Bukreeva

Khimiya Prirodnykh Soedinenii, Vol. 4, No. 5, pp. 321–322, 1968

On treating the epigeal part of Artemisia lercheana Web. et Stechm. collected in the Makhach-Kala district with steam we obtained 0.18% of essential oil (on the weight of the air-dry plant collected in the flowering period).

The physicochemical constants of the oil are as follows: d_4^{20} 0.9192, n_D^{20} 1.4680; $[\alpha]_D$ −29.28°; acid no. 0.14; ester no. 1762.

A preliminary fractionation of the essential oil was carried out by vacuum distillation. To isolate the individual components we used repeated chromatography on alumina, (neutral, activity grade II).

The individual components of the essential oil were identified by their IR spectra, by suitable derivatives, and by the results of gas-chromatographic analysis. The analysis was carried out on a UKh-1 chromatograph using as the stationary liquid phases PEG-400 (temperature of separation 120° C) and bis-(β-cyanoethyl) ether (temperature of separation 70° C), deposited on INZ-600 inert carrier (grain size 0.3–0.4 mm) in an amount of 20% of the weight of the carrier. The carrier gas was helium and the rate of flow 30–50 ml/min. Limonene was used as the standard substance for calculating the retention volumes.