FLAVONOIDS OF *Astragalus babatagi*

R. K. Yasinov and G. P. Yakovlev

UDC 547.972

Continuing a study of plants of the genus *Astragalus* (milk vetch) family Fabaceae (Leguminosae), we have investigated the epigeal part of *Astragalus babatagi* M. Pop. collected in the flowering period in May, 1984, in the basin of the R. Varzob close to the kishlak of Bigar in Tadzhikistan.

On one- and two-dimensional paper chromatography of an ethanolic extract in the solvent systems butan-1-ol—CH_3COOH—H_2O (4:1:5) and 15% acetic acid, more than 12 substances of flavonoid nature were detected.

To isolate the total flavonoids, 1.0 kg of the dried and comminuted herb was exhaustively extracted successively with 96% and 70% ethanol. The combined extracts were evaporated in vacuum to an aqueous residue, and this was treated with chloroform to eliminate ballast substances. The flavonoids were extracted from the purified aqueous extract with ethyl acetate, which was then evaporated off in vacuum, and the concentrated residue was deposited on a column containing polyamide sorbent. The flavonoids were then eluted successively with water and ethanol of various concentrations.

Five individual substances were isolated from *Astragalus babatagi*: three glycosides (I, II, and III) and two aglycons (IV and V).

Substance (I) was identified as rutin (quercetin 3-O-rutinoside), $C_{27}H_{30}O_{16}\cdot 2H_2O$, mp 190-191°C (aqueous ethanol), $[\alpha]_D^{20}$ −32.2° (c 0.3; methanol), λ_{max} 260, 360 nm [1].

Substance (II) was quercitrin (quercetin 3-O-rhamnoside), $C_{21}H_{20}O_{11}$; mp 177-180°C (aqueous ethanol), $[\alpha]_D^{20}$ −164° (c 0.1; ethanol), λ_{max} 360, 260 nm [2].

Substance (III) was hyperoside (quercetin 3-O-galactoside), $C_{21}H_{20}O_{12}$, mp 237-238°C (aqueous ethanol), $[\alpha]_D^{20}$ −27.8° (c 0.5; methanol), λ_{max} 363, 257 nm [3].

Substance (IV) was quercetin, $C_{15}H_{10}O_7$, mp 312-314°C (ethanol), λ_{max} 372, 256 [4].

Substance (V) was kaempferol, $C_{15}H_{10}O_6$, mp 276-277°C, ethanol), λ_{max} 270, 265 [4].

The strucutres of all the compounds isolated were confirmed by the results of elementary analysis, UV, and IR spectroscopy, and a study of the products of acid and alkaline hydrolysis, and also by comparison with authentic samples. This is the first time that the flavonoids of *A. babatagi* have been investigated.

LITERATURE CITED

1. M. D. Alaniya, N. F. Komissarenko, and É. P. Kemertelidze, Khim. Prir. Soedin., 529 (1971).
2. V. N. Spiridonov, Dokl. Akad. Nauk SSSR, 169, No. 1, 126 (1966).
3. L. K. Klyshev, V. A. Bandyukova, and L. S. Alyukina, Plant Flavonoids [in Russian], Alma-Ata (1978), p. 31.
4. V. A. Bandyukova, Rast. Resur., 1, No. 4, 596 (1965).

Abu Ali Ibn Siny Tashkent State Medical Institute, Dushanbe. Translated from Khimiya Prirodnykh Soedinenii, No. 3, pp. 373-374, May-June, 1986. Original article submitted December 7, 1985.

0009-3130/86/2203-0349$12.50