TRITERPENEGLYCOSIDES OF Astragalus AND THEIR GENINS

XXXVI. CYCLOARTANES OF Astragalus uninodus

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We are continuing a study of triterpenoids of plants of the genus Astragalus (Leguminosae). The screening by the TLC method of various organs of A. uninodus M. Pop. et Vved. showed that the roots contained triterpenoids. The air-dry roots of this plant (3.7 kg) collected on July 15, 1989 in the Hissar range in the gorge of the R. Shargun' (Sukhandar' province of the Uzbek SSR) were extracted with methanol (3 × 17 liters). Evaporation of the methanolic solutions yielded 519 g of dry extract. Of this extract, 150 g was chromatographed on a column of silica gel with elution successively by chloroform and the solvent systems chloroform–methanol (15:1), chloroform–methanol–water (70:12:1), and chloroform–methanol–water (70:23:4). By repeated rechromatography of the fractions obtained we isolated seven individual substances. All the compounds proved to have been described previously from various species of Astragalus and were identified on the basis of their physicochemical constants, R_f values in TLC, and comparison with authentic samples, and also from their PMR spectra. These substances are given in order of their increasing polarity.

Cyclosieversigenin – 150 mg (0.014% both here and below the yield is given on the air-dry raw material), mp 239-241°C (from methanol, $[\alpha]_D^{24}$ + 50 ± 2° (c 1.0; methanol) [1, 2].

β-Sitosterol β-D-glucopyranoside – 82 mg (0.008%), mp 276-279°C (from methanol), $[\alpha]_D^{24}$ – 36 ± 2° (c 0.9; pyridine) [3].

Cyclosieversioside A – 100 mg (0.009%), mp 229-230°C (from methanol), $[\alpha]_D^{24}$ + 21 ± 2° (c 1.0; methanol) [2, 4].

Cyclosieversigenin 3-O-β-D-xylopyranoside – 160 mg (0.015%), mp 263-264°C (from methanol), $[\alpha]_D^{24}$ + 41 ± 2° (c 0.5; methanol) [2, 5].

Cyclosieversioside C – 256 mg (0.024%), mp 253-255°C (from methanol), $[\alpha]_D^{24}$ + 21 ± 2° (c 1.0; methanol) [2, 4].

Cyclosieversioside E – 892 mg (0.0835%), mp 216-218°C (from methanol), $[\alpha]_D^{24}$ + 25 ± 2° (c 0.8; chloroform–methanol (1:1)) [2, 6].

Cyclosieversioside F – 15.2 g (1.42%), mp 284-286°C (from methanol), $[\alpha]_D^{24}$ + 38 ± 2° (c 0.5; methanol) [2, 7].

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