

Arenaria graminifolia Schrad. (grass-leaf sandwort) is a perennial plant of the family Caryophyllaceae. Some species of sandwort contain large amounts of saponins which have not been studied chemically [1].

We have investigated the saponins from grass-leaf sandwort collected in the Tatar ASSR. The roots of the plant, previously defatted by boiling with chloroform, were exhaustively extracted with methanol. By thin-layer chromatography on silica gel in the systems 1) butan-1-ol-acetic acid-water (4:1:5) and 2) butan-1-ol-25% ammonia-ethanol (7:5:2) two predominating glycosides, which have been called arenariosides A and B, have been found in the extract. For their isolation, a methanolic extract was poured into water and extracted with butan-1-ol. The aqueous extract was purified from reserve sugars and oligosaccharides by gel filtration on Sephadex G-25, and the mixture of saponins was separated on a column of silica gel in solvent system 1.

Arenarioside A, mp 255-260°C, $[\alpha]_D^{20} - 11^\circ$ (c 1.47; pyridine) was obtained with a yield of ~1% of the weight of the raw material. The glycoside consists of a white amorphous powder readily soluble in water and aqueous alcohols. Acetate: mp 163-165°C, $[\alpha]_D^{20} - 20^\circ$ (c 1.0; methanol). The hydrolysis of arenarioside A with 5% hydrochloric acid formed the aglycone, with mp 265-267°C, $[\alpha]_D^{20} + 90^\circ$ (c 1.0; ethanol), the constants and chromatographic behavior of which were identical with those of gypsogenin. In addition to gypsogenin, the glucosiduronic acid vaccaroside [2] with mp 220-223°C, $[\alpha]_D^{20} + 24^\circ$ (c 1.0; pyridine) was isolated. The carbohydrate moiety of the glycoside was found by paper chromatography (PC) in system and in benzene-butanol-pyridine-water (1:5:3:3) in comparison with authentic samples to contain galactose, xylose, and rhamnose in a ratio of 1:2:2 and glucuronic acid.

Arenarioside A was saponified with 10% alkali. The glycoside formed [mp 290-295°C, $[\alpha]_D^{20} + 20^\circ$ (c 1.0; pyridine)] was extracted with butanol and purified by chromatography on silica gel in water-saturated butanol. After the acid hydrolysis of the glycoside, galactose and xylose (1:1) and glucuronic acid were identified.

The acid hydrolysis of the oligosaccharide split off gave xylose and rhamnose. Arenarioside A was oxidized with sodium periodate and the product was hydrolyzed. Xylose and glucuronic acid were identified in the hydrolyzate by PC.

Arenarioside B, mp 248-252°C, $[\alpha]_D^{20} - 26^\circ$ (c 1.0; pyridine) was obtained with a yield of $\approx 0.2\%$. After hydrolysis of the glycoside with 5% hydrochloric acid, galactose, glucose, xylose, and rhamnose (1:1:2:1) and glucuronic acid and gypsogenin were found.

LITERATURE CITED

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