STEROID SAPOGENINS OF Smilax excelsa

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The present paper gives information on the steroid compounds of Smilax excelsa (sturdy greenbrier), family Liliaceae.

We first studied the epigeal and subterranean parts of the plant collected in the Lenkoran region, Azerbaidzhan ASSR. Steroid compounds were present in the subterranean organs. We developed the following method for isolating the sapogenins.

The comminuted raw material was extracted with 80% ethanol. The extract was concentrated to an aqueous residue and this was hydrolyzed with 10% sulfuric acid for 12 h. The residue was separated from the mother solution, neutralized, and dried, and was successively extracted with petroleum ether, benzene, and ethanol.

By chromatographic analysis on paper and in a thin layer of silica gel, the ether-soluble fraction was found to contain three sapogenins. The individual representatives of these steroids were isolated by partition column chromatography on alumina.

Substance I has the composition $C_{27}H_{42}O_3$, mp 204-205°C, $[\alpha]_D^{20}$ −122.5° (c 0.8, chloroform). By a comparison of IR spectra, by paper chromatography (R_f 0.63) in the system of solvents for monohydroxysapogenins [1], and by determining the melting point of a mixture, the substance was identified as diosgenin.

Substance II, with the composition $C_{27}H_{44}O_3$, mp 198-201°C, $[\alpha]_D^{20}$ −63.5° (c 0.5, chloroform), forms a monoacetate, $C_{29}H_{46}O_4$, mp 203-204°C, $[\alpha]_D^{20}$ −73.4° (c 0.5, chloroform). From its chromatographic behavior (R_f 0.7) [1] and its IR spectrum, substance II is a monohydroxysapogenin with an isospirane structure. The physicochemical properties of this substance are similar to those of tigogenin, previously isolated from other, foreign, species of Smilax [2].

Substance III, which is more polar, was not studied because of its small amount.

LITERATURE CITED

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2. A. Akabori and I. Yasuda, Japanese Patent 16F5, No. 24626, of October 27, 1965; Ref. zh. Khimiya, 22N 405 P (1967).

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