CARDENOLIDES OF Adonis wolgensis

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We have previously [1] reported the isolation from the epigeal part of Adonis wolgensis of strophanthidin, cymarin, and K-strophanthin-β. On continuing the investigation of this plant, we obtained a substance of cardenolide nature with the empirical formula $C_{29}H_{42}O_{10}$, mp 242-246°C, $[\alpha]_D^{20}$ −3° (ethanol) forming with 84% sulfuric acid colorations changing with time: 0 min − red; 5-30 min − brown; 45-60 min − dirty brown; 75 min − greenish brown; 90 min − olive green; and 120 min − green.

The UV spectrum of the substance shows two absorption maxima: at 220 nm (log ε 4.2) − butenolide ring − and at 305 nm (log ε 1.5) − aldehyde group. Acetylation formed a triacetate $C_{35}H_{48}O_{13}$ with mp 232-234°C, $[\alpha]_D^{20}$ −10° (chloroform). Acid hydrolysis by the method of Mannich and Siewert [2] split the substance into L-rhamnose and strophanthidin. According to Klyne's rule [3] the glycoside has an α-glycosidic bond. On the basis of these results it may be deduced that the glycoside isolated is convallatoxin.

The results of a comparison of the physicochemical properties of the substance under investigation and of an authentic sample of convallatoxin and of their UV spectra, their R_f values in various solvent systems, and their colorations with 84% sulfuric acid showed their complete identity. In the Adonis genus, this cardenolide has been found previously in the Amur adonis and the Turkestan adonis [4, 5]. This is the first time it has been found in A. wolgensis.

LITERATURE CITED

1. N. F. Komissarenko, É. P. Korzennikova, and V. Ya. Yatsyuk, Khim. Prirodn. Soedin., 433 (1973).
2. W. Klyne, Biochem. J., 47, No. 4, XLI (1950).
3. C. Mannich and E. Siewert, Chem. Ber., 75, 737 (1942).
4. A. A. Ponomarenko, N. F. Komissarenko, and K. A. Stukkei, Khim. Prirodn. Soedin., 848 (1971).
5. N. F. Komissarenko, É. P. Korzennikova, M. A. Angarskaya, and D. G. Kolesnikov, Rast. Res., 9, 532 (1973).

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