# EVONOSIDE FROM Euonymus medirossica

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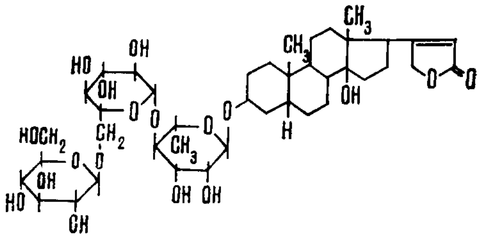
As reported previously, from the seeds of Euonymus medirossica Klok. five cardenolides have been isolated – evomonoside [1], evonoloside [2], glucoevonogenin [3], glucoevonoloside [3], and evonogenin [4].

By chromatographing the combined polar cardenolides (the method for their purification has been described previously [3]) on cellulose in the toluene–butan-1-ol (1 : 1)/water system and on alumina (activity grade V; eluent: chloroform–methanol) we have obtained another cardiac glycoside in the amorphous, but chromatographically individual, state with $[\alpha]_D$ −38.5 ± 2° (c 2.00; methanol); with concentrated $H_2SO_4$ it forms the following colors changing with time: 0 min – orange-brown; 25 min – red; 1 h – violet. Under the action of an enzyme preparation from the grape snail it hydrolyzes, forming D-glucose and evomonoside (identified by paper chromatography). The assumption that this glycoside is evonoside (digitoxigenin 3-[β-D-glucosyl-β-D-glucosyl-α-L-rhamnoside] [5] was confirmed by a direct comparison of it with a sample kindly given to us by Prof. T. Reichstein. Evonoside has recently been isolated from the seeds of jute by Abubakirov et al. [6].

To determine the position of attachment of the terminal D-glucose in evonoside, the glycoside was partially hydrolyzed with 0.2 N sulfuric acid (3 h at 95-100°C). The acid was neutralized with barium carbonate, and the hydrolyzate was analyzed by paper chromatography. The following substances were detected: D-glucose, L-rhamnose, and gentiobiose. On this basis, it may be considered with high probability that the terminal D-glucose is attached to the preceding one at $C_{6''}$. This conclusion is also confirmed by the results of methylation (with methyl iodide in dimethylformamide, heated with silver oxide under reflux for 8 h) and by the hydrolysis of methylated evonoside. Among the hydrolysis products a monosaccharide having the same $R_f$ values of chromatograms as 2,3,4-tri-O-methyl-D-glucose was found.

The structure of the carbohydrate component of evobioside has been established by one of us previously [7]: evobioside is digitoxigenin 3β-O-[O-β-D-glucopyranosyl-(1 → 4)-α-L-rhamnopyranoside]. The latter may be considered as a component part of evonoside, since it was obtained by Reichstein [8] by the enzymatic hydrolysis of the triglycoside under investigation.



Thus, evonoside can be identified as digitoxigenin 3β-O-[O-β-D-glucopyranosyl-(1 → 6)-O-β-D-glucopyranosyl-(1 → 4)-α-L-rhamnopyranoside].

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