TRITERPENOIDS OF THE ROOTS OF *Glycyrrhiza uralensis*

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We have obtained the triterpene compound from the roots of *Glycyrrhiza uralensis* in the form of methyl esters by the methanolysis of the saponins by the method described previously [1]. The neutral products of methanolysis were separated on inactive alumina (1:100). The first fractions, eluted by petroleum ether–diethyl ether (1:1) contained a substance with mp 238-240°C (about 0.1%), R_f 0.53 (chloroform).

On the basis of its UV spectrum (λ_{max} 282, 259, 250, 242 nm), it was assumed that it consisted of a mixture of homoannular and heteroannular dienes. The substance was acetylated by the usual method, and the resulting acetate was treated with selenium dioxide in acetic acid [2]. The acetate of a heteroannular diene with mp 232-234°C was isolated. UV spectrum: λ_{max} 259, 250, 242 nm; mp of the methyl ester 262-263°C. These figures coincide with those given for the methyl ester of 3β-hydroxyolean-11,13(18)-dien-30-oic acid, which has been found in the products of the hydrolysis of the saponins of common licorice by Italian workers [3].

Thus, the substance isolated with mp 238-240°C is a mixture of the methyl esters of 3β-hydroxyolean-11,13(18)-dien-30-oic acid (heteroannular diene) and of 3β-hydroxyolean-9(11),12(13)-dien-30-oic acid (homoannular diene, which is converted by reaction with selenium dioxide into the heteroannular diene). The main product of methanolysis (about 50%) was methyl glycyrrhetate with R_f 0.28 (chloroform), mp 255°C; identified by IR and UV spectroscopy and also on the basis of the preparation of the acetate.

After the isolation of methyl glycyrrhetate the fractions contained a substance with mp 265-267°C (0.2%), R_f 0.13 (chloroform); UV spectrum; λ_{max} 281, 259, 250, 241. From the R_f value and the UV spectrum it was assumed that the substance consisted of a mixture of methyl esters of dihydroxytriterpene acids with homoannular and heteroannular systems of double bonds.

We have also obtained the substances with mp 238-240°C and 265-267°C from the herbage of common licorice [4] and from the roots of *Glycyrrhiza korzhinskii*.

The following substance eluted by diethyl ether–chloroform (1:3) was methyl 24-hydroxyglycyrrhetate with mp 245-246°C (2%), which was identified by its IR and UV spectra. This substance gave no depression of the melting point with a sample obtained from *Glycyrrhiza korzhinskii* [1]. Their diacetates were identical. The subsequent fractions contained a substance (about 0.05%) $C_{30}H_{44}O_5$ with mp 307-308°C; UV spectrum: λ_{max} 236 nm (ethanol); IR spectrum: 3450, 3350, 1755, 1660 cm^{-1}. The substance formed a diacetate $C_{34}H_{48}O_7$ with M^+ 568, mp 334-335°C; IR spectrum: 1780, 1725, 1670, 1630 cm^{-1}. This compound was identical in its properties with the 21α-hydroxyisoglabrolide isolated from the roots of *Glycyrrhiza glabra* [5].

LITERATURE CITED

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