

ISOMACEDONIC ACID FROM THE ROOTS OF
Glycyrrhiza echinata

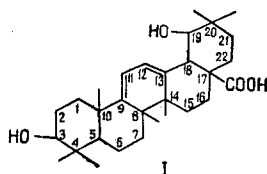
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The neutral products from the acid hydrolysis of an aqueous extract of *Glycyrrhiza echinata* were obtained by the method described previously [1]. Chromatographic separation of the neutral products on Al_2O_3 (inactivated) with chloroform elution yielded several individual substances. One of them, with the composition $C_{31}H_{48}O_4$, mp 222-225°C, M^+ 484 (mass spectrometry), IR spectrum, cm^{-1} : 1725, 3300, 3540, R_f 0.4 [inactivated Al_2O_3 , petroleum ether-diethyl ether (1:2)], forms a diacetate with mp 229-230°C (IR spectrum: 1735 cm^{-1}) and, on saponification, a dihydroxy acid with mp 285°C (IR spectrum: 1703, 3450 cm^{-1}), the diacetate of which has mp 282°C (IR spectrum: 1710, 1740, 3300 cm^{-1}). The UV spectra of the dihydroxy acid and of all the derivatives mentioned have λ_{max} 281 nm ($\log \epsilon$ 3.5-3.7). All the derivatives were obtained by the usual methods. The properties described above permitted the conclusion that the substance isolated was the methyl ester of a triterpene dihydroxy acid containing a conjugated system of double bonds in one ring.

The oxidation of the diacetate of the methyl ester of the substance with mp 229-230°C with selenium dioxide in acetic acid gave a product with mp 236-237°C. UV spectrum: λ_{max} 259, 250, 241 nm ($\log \epsilon$ 4-4.15). The properties of this substance (UV and IR spectra, melting point) were identical with those of the diacetate of methyl macedonate and gave no depression in a mixed melting point [2]. Saponification yielded macedonic acid. Apparently, in this case migration of the double bonds under the influence of SeO_2 takes place in the same way as has been observed in the conversion of isomeristotropic acid into meristotropic acid [3]. Furthermore, the products of the oxidation of the methyl ester diacetate studied and of the diacetate of the methyl macedonate were found to contain a common oxidation product, probably a dienedione with mp 298°C (IR spectrum, cm^{-1} : 1620, 1660, 1690, 1740).

Thus, bearing in mind the possible structure of macedonic acid, structure (I) may be proposed for the substance under investigation [4].



The presence in the roots of *A. echinata* of 3,19-dihydroxyolean-9,11:12,13-diene-17-carboxylic acid confirms the fact that in the false liquorices the triterpene compounds are found mainly in the form of homo- or heteroannular dienes.

LITERATURE CITED

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