

TRITERPENE COMPOUNDS OF THE HERBAGE  
OF *Glycyrrhiza glabra*

N. P. Kir'yalov, I. A. Murav'ev,  
E. F. Stepanova, and V. F. Bogatkina

UDC 547.913

As shown previously [1, 2] the herbage of *Glycyrrhiza glabra* L. (common licorice) contains no glycyrrhizic acid but does contain other triterpene saponins [2, 3].

From a viscous aqueous extract of the herbage of licorice we obtained the crude saponins by treating the extract with boiling methanol. Then they were hydrolyzed in methanol containing 5-7% of conc. sulfuric acid on the water bath for 12 h. The hydrolysis products were separated into acid and neutral fractions, and the neutral compounds were transferred to a column of alumina (activity grade III-IV) and eluted with chloroform. After chromatographic separation and repeated recrystallization from methanol, a number of individual compounds was obtained, one of which was identical with methyl glycyrrhetate; mp 253-255°C; IR spectrum: 1620  $\text{cm}^{-1}$  (double bond), 1660  $\text{cm}^{-1}$  (conjugated keto group), 1723  $\text{cm}^{-1}$  (ester group), 3340  $\text{cm}^{-1}$  (hydroxy group); UV spectrum:  $\lambda_{\text{max}}$  248 nm ( $\log \epsilon$  3.67). The acetate of the methyl ester, obtained in the usual way, was also identical with the corresponding derivative of glycyrrhetic acid.

In the products of the saponification of the mixture of esters, a substance corresponding to uralenic acid (mp 327-330°C,  $\lambda_{\text{max}}$  243 nm) was obtained. The yield of the two compounds was 2% of the combined unpurified saponins.

Two substances of triterpene nature not containing a conjugated keto group were also isolated: 1) mp 238-240°C, IR spectrum: 3380  $\text{cm}^{-1}$  (hydroxy group), 1725  $\text{cm}^{-1}$  (ester); UV spectrum:  $\lambda_{\text{max}}$  280, 259, 250, 241 nm; and 2) mp 265-267°C, IR spectrum: 1725, 3280  $\text{cm}^{-1}$ ; UV spectrum:  $\lambda_{\text{max}}$  281, 259, 250, 241 nm.

Presumably these substances are homo- and heteroannular dienes.

LITERATURE CITED

1. J. Hajkova and V. Brazdova, *Farmaceuticky Obzor*, **3**, 105-110, 1963.
2. I. A. Murav'ev and E. F. Stepanova, *Questions of the Study and Use of Licorice in the USSR* [in Russian], Moscow-Leningrad, 1966, pp. 154-157.
3. N. P. Kir'yalov, I. A. Murav'ev, E. F. Stepanova, and V. F. Bogatkina, *Abstracts of Lectures at a Symposium on the Study and Use of Licorice in the National Economy of the USSR* [in Russian], Ashkhabad, 1969, p. 82.

---

Pyatigorsk Pharmaceutical Institute. Komarov Botanical Institute, Academy of Sciences of the USSR. Translated from *Khimiya Prirodnikh Soedinenii*, No. 6, pp. 770-771, November-December, 1970. Original article submitted September 1, 1970.

© 1973 Consultants Bureau, a division of Plenum Publishing Corporation, 227 West 17th Street, New York, N. Y. 10011. All rights reserved. This article cannot be reproduced for any purpose whatsoever without permission of the publisher. A copy of this article is available from the publisher for \$15.00.