

We are the first to give an account of the saponins of *Anemone ranunculoides* L. There is information in the literature of the detection by qualitative tests of saponins in other species of *Anemone* [1]. Saponins and aglycones of undetermined structure have been isolated from some of them [2, 3].

We have studied the rhizome of this plant collected in the Perm oblast in June, 1973. The air-dried rhizomes (200 g) were comminuted and treated with chloroform in a Soxhlet apparatus. The dried extract was heated with 80% ethanol (4 × 600 ml) on a boiling-water bath for 1 h each time. The ethanolic extracts were evaporated in vacuum to a viscous state and dissolved in water (20 ml). The glycosides were extracted from the aqueous solution by butan-1-ol. The butanolic extracts were washed with water and filtered through a column of inactivated alumina (5 × 8 cm). The extract purified in this way was evaporated in vacuum to small volume, and the glycosides were precipitated with acetone. The precipitate was filtered off and dried in vacuum. This gave 6.12 g of a white powder, which amounted to 3.06% of the dry raw material. The residue contained no free sugars and burnt without an inorganic residue.

A chromatographic investigation in a thin layer of type KSK silica gel in the butan-1-ol-ethanol-15% ammonia (18:3.5:18) and chloroform-methanol-water (65:35:8) systems showed the presence of six glycosides, which we have called anemonosides A, B, C, D, E, and F in the order of increasing polarity. Hydrolysis with a mixture of 10% hydrochloric acid and methanol (1:1) on the boiling-water bath for 3 h gave an aglycone which was identified as oleanolic acid (by chromatography, IR spectroscopy, and a mixed melting point).

By paper chromatography in the butan-1-ol-acetic acid-water (5:1:5) system glucose, arabinose, and rhamnose were detected in the hydrolyzate.

LITERATURE CITED

1. A. I. Shreter, A. S. Gladkikh, I. A. Gubanov, M. G. Pimenov, and R. E. Pimenova, *Rast. Res.*, No. 2, 3 (1966).
2. Wei-juan-Huang, *Acta Chem. Sinica*, **18**, 126 (1962).
3. A. Bienfait, *Bull. Ordre Pharmaciens*, **15** (42), 167 (1960); *Chem. Abstr.*, **61**, 46996 (1964).

Perm State Pharmaceutical Institute. Translated from *Khimiya Prirodnykh Soedinenii*, No. 1, p. 101, January-February, 1975. Original article submitted April 2, 1974.

© 1976 Plenum Publishing Corporation, 227 West 17th Street, New York, N.Y. 10011. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, microfilming, recording or otherwise, without written permission of the publisher. A copy of this article is available from the publisher for \$15.00.