

In the USSR, three species of *Xanthogalum* are found: *X. purpurascens*, *X. sachokianum* Karjag., and *X. Tatiana*e [1]. The coumarin composition of *Xanthogalum purpurascens* has been studied previously [2-6]. We have studied for the first time the coumarin compounds from the fruit and roots of *X. sachokianum* (endemic for the Dagestan ASSR) collected in September, 1976, in the Akhta region of the Dagestan ASSR. From the fruit of the plant we have isolated: umbelliprenin with mp 62-64°C; $[\alpha]_D^{20} +3.6^\circ$ (c 1.388; chloroform) (I); bergapten with mp 187-189° (II); biacangelicin with mp 117-118°C, $[\alpha]_D^{20} +26.5^\circ$ (c 0.226; chloroform) (III), and xanthalin (in the form of an oil) (IV). From the roots we obtained ostruthol with mp 138-139°C (V); isopimpinellin with mp 148-150°C (VI) and β -sitosterol with mp 135-136°C (VII). The IR spectra and melting points of the substances isolated coincide with those given in the literature for known compounds [2-8].

From the comminuted fruit of the plant (111 g) by extraction with trichloroethylene we obtained 16 g of a resin (14.4% on the air-dry weight of the material), which was dissolved in 10 ml of chloroform and chromatographed on a column of neutral Al_2O_3 (activity grade III). The ratio of Al_2O_3 to resin was 12.5:1. The substances were eluted with gasoline (80 ml), gasoline-chloroform (1:1) (100 ml), and chloroform (200 ml).

After the elimination of the solvent from the gasoline eluates, essential and fatty oils, umbelliprenin, and xanthalin were isolated. Rechromatography of the residue (1.7 g) obtained when the column was eluted with gasoline-chloroform and with chloroform yielded biacangelicin and bergapten.

The roots of *Xanthogalum sachokianum* (754 g) were extracted with chloroform. The resulting resin (40.4 g, 5.3%) was mixed with 20 ml of chloroform and chromatographed on a column at a ratio of Al_2O_3 to resin of 11:1. The column was washed with gasoline (180 ml), with gasoline-chloroform (1:1) (140 ml), and with chloroform (260 ml).

The gasoline eluates contained isopimpinellin and β -sitosterol. Ostruthol was obtained from the fractions obtained when the column was eluted with a mixture of gasoline and chloroform.

LITERATURE CITED

1. Flora of the USSR [in Russian], Moscow-Leningrad, Vol. 17 (1951).
2. G. K. Nikonov, Zh. A. Manaeva, and G. Yu. Pek, Khim. Prir. Soedin., 360 (1966).
3. G. K. Nikonov, Zh. Obshch. Khim., 34, 3853 (1964).
4. A. I. Sokolova, G. K. Nikonov, Khim. Prir. Soedin., 317 (1969).
5. A. I. Sokolova, G. K. Nikonov, M. E. Perel'son, G. P. Syrova, and Yu. N. Sheinker, Khim. Prir. Soedin., 280 (1968).
6. Second Symposium on the Study of Natural Coumarins. Abstracts of Lectures [in Russian], Leningrad (1970), p. 45.
7. G. A. Kuznetsova, Natural Coumarins and Furocoumarins [in Russian], Leningrad (1967).
8. M. E. Perel'son, Yu. N. Sheinker, and A. A. Savina, The Spectra and Structure of Coumarins, Chromones, and Xanthoncs [in Russian], Moscow (1975).