ISOLATION OF ALKALOIDS FROM Ungernia severtzovii BY THE ION-EXCHANGE METHOD

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At the present time, lycorine is obtained industrially by an ion-exchange method [1, 2]. One of the stages of this method is the isolation of lycorine from eluates consisting of an alkaline solution of the combined alkaloids. We have determined the partition coefficient (K_p) of lycorine between chloroform, diethyl ether, benzene, and dichloroethane and the eluate.

For this purpose, the eluates obtained from 1 kg of the raw material from Ungernia severtzovii by a known method [1] were made alkaline with 25% ammonia to pH 9-10, and the alkaloids were extracted four times with the corresponding solvents in a ratio of 4 :1.

Solvent	K_p
Chloroform	1.5
Diethyl ether	0.64
Benzene	0.8
Dichloroethane	0.46

The partition coefficient of lycorine between chloroform and the eluate is higher than those for the other solvents, and therefore it is rational to perform the extraction of the lycorine from the eluate with chloroform.

Besides lycorine, the leaves of Ungernia severtzovii contain the alkaloids galanthamine, pancratine, narvedine, and others [3-5]. These three alkaloids were found in an investigation of the residual mother solution. To isolate these alkaloids, the mother solution obtained in the extraction of lycorine from 300 kg of Ungernia severtzovii was made alkaline to pH 10 with 25% ammonia and the alkaloids were extracted with diethyl ether and chloroform. The ethereal extract was dried with anhydrous potassium carbonate and evaporated to dryness (344 g). Then the combined ethereal alkaloids were dissolved in acetone, the insoluble residue was separated off, and with strong cooling concentrated HBr was added to the acetone mother solution. Galanthamine hydrobromide with mp 256°C (from 55% ethanol) precipitated. Yield 70 g.

Concentration of the chloroform-soluble combined alkaloids gave pancratine with mp 180°C (from methanol).

Thus, galanthamine and pancratine have been isolated from the wastes from the production of lycorine.

LITERATURE CITED

1. T. Sadikov and T. T. Shakirov, Khim. Prirodn. Soedin., 49 (1972).
2. T. Sadikov, T. T. Shakirov, Kh. A. Abduazimov, and S. Yu. Yunusov, USSR Author's Certificate No. 323, 126, Byul. Izobret., No. 1 (1972).
3. Sh. S. Umarova, U. B. Zakirov, and I. K. Kamilov, in: The Pharmacology of Alkaloids [in Russian], Tashkent (1965), p. 258.
4. E. D. Bazhenova, Kh. U. Aliev, U. B. Zakirov, and I. K. Kamilov, Dokl. Akad. Nauk UzSSR, No. 1, 38 (1966).
5. L. S. Smirnova, Kh. A. Abduazimov, and S. Yu. Yunusov, Khim. Prirodn. Soedin., 322 (1965).

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