THE PREPARATION OF PEGANINE HYDROCHLORIDE

B. K. Mirzakhmedov, Kh. N. Aripov, and T. T. Shakirov

UDC 547.944/945

The comminuted air-dry plant Peganum harmala containing 0.5% of peganine [1, 2] was charged through a battery of five extractors taking 40 kg each. A 2% solution of sulfuric acid was used as the extractant. Extraction was performed by the continuous-flow method. The extractant was fed at the rate of 90 liters/h. When each 250 liters of extract had been obtained, alternate extractors were recharged; in this way 500 kg of the plant was extracted and about 3000 liters of extract was obtained. The extract was filtered and passed through a battery of five absorbers at the rate of 90-100 liters/h. Each adsorber contained 7 kg of KU-1 cation-exchange resin in the H form. No breakthrough of alkaloids was observed throughout the period of working of the battery of adsorbers. After the end of the processes of extraction and sorption, the adsorbers were washed with water, and the alkaloids were desorbed with a 1.5% solution of ammonia in 85% ethanol.

The rate of elution was 100 liters/h · m^2 and the volume of eluent used 850 liters. The ethanolic solution was evaporated until the water began to distill off, and the residue was treated with chloroform (40 liters).

The chloroform solution of the alkaloids was extracted with 60 liters of buffer solution, pH 5, in 10-liter portions. The buffer solution was made alkaline with concentrated ammonia to pH 9-10 and washed with gasoline (100 liters) to eliminate accompanying alkaloids. Then the buffer solution was treated with chloroform. The chloroform solution was concentrated, and the residue was dissolved in methanol (10 liters). When the methanol was concentrated to 1.5-2 liters, peganine deposited. The base was converted into peganine hydrochloride, and this was purified by recrystallization from ethanol. A total of 1800 g of peganine hydrochloride – 0.36% of the weight of the raw material – was obtained.

LITERATURE CITED

1. S. Yu. Yunusov, Alkaloids [in Russian], Tashkent (1974).
2. A. I. Ban'kovskii, in: Medicinal Plants [in Russian], Vol. XV, Moscow (1969), p. 5.

Institute of the Chemistry of Plant Substances, Academy of Sciences of the Uzbek SSR. Translated from Khimiya Prirodnykh Soedinenii, No. 3, p. 432, May-June, 1975. Original article submitted December 8, 1974.