MERENDERINE – A NEW BASE FROM Merendera raddeana

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One of the genera of the family Liliaceae that contain the greatest amount of alkaloids is Merendera Ram. (merendera) which is represented in the USSR by eight species [1]. The majority of them have not been investigated for their content of alkaloids or have been studied insufficiently. We have investigated Merendera raddeana Rgl. collected in the flowering period on the slopes of Mt. Aragats (Armenian SSR). It was known that this plant contains colchicine [2, 3].

The epigeal part of the plant (780 g) was extracted with methanol. Neutral (I) and basic (II) fractions of the alkaloids were obtained by the procedure described previously [4]. Then fractions (I) and (II) were separated into phenolic and nonphenolic parts. Fraction (I) yielded 0.13% of nonphenolic, 0.07% of phenolic, and 0.11% of phenolic acid substances, and (II) 0.02% of nonphenolic bases and 0.17% of phenolic bases.

Chromatography in a thin layer of alumina [chloroform–methanol (24:1)] system of the phenolic and nonphenolic compounds in fraction (I) showed the presence of β-lumicolchicine, colchicine, 2-desmethylcolchicine, N-formyldesacetylcolchicine, 3-desmethyl-β-lumicolchicine, 3-desmethyl-γ-lumicolchicine, and 2-desmethyl-β-lumicolchicine [5, 6]. The first three alkaloids were also isolated by separating the mixtures of alkaloids in a column of alumina and were identified by their physicochemical constants in comparison with authentic samples. It was shown by paper chromatography [butan-1-ol–12% aqueous ammonia (2:1) system] that the phenolic acid fraction contained colchiceine and 2-desmethylcolehiceine.

The substances from fraction (II) could not be separated by chromatography on paper and in a thin layer of alumina. The chromatography of the phenolic bases on a column of alumina yielded an unknown alkaloid with the composition $C_{21}H_{25-27}O_5N$, mp 219–230° C (from acetone), $[\alpha]_D^{20}$ + 105° (c 0.57; chloroform), mol. wt. 374 (mass spectrometrically). UV spectrum in methanol: λ_{max} 260 nm (log ε 4.11). The alkaloid does not have a tropolone ring and its physicochemical constants differ from those of known compounds. It has been called merenderine.

Colchicine and merenderine are the main alkaloids of the plant.

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