Alcoholic extraction of the roots of *D. ternatum* gave 0.43% of combined bases. They were separated into ether-soluble and chloroform-fractions by extracting the alkaloids from an alkaline aqueous solution with pH 8-9 (Na_2CO_3) and then with pH 12 (20% KOH). Delpheline and lycoctonine were isolated by chromatography of the ether fraction (pH 8-9) on a column of alumina (eluent — ether).

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INFLUENCE OF MAGNETIC AND ELECTROMAGNETIC FIELDS ON THE CHROMATOGRAPHIC BEHAVIOR OF ALKALOIDS

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In analytical chemistry, the phenomena of magnetism are used to study the course of redox reactions and polymerizations [1] and to determine the equivalence point in titrimetry [2].

We have studied the chromatographic behavior of alkaloids (codeine, caffeine, morphine hydrochloride, papaverine hydrochloride, pilocarpine hydrochloride, and physostigmine salicylate) in a thin layer of silica gel (Silufol, Czechoslovakia) in a constant magnetic field with a strength of about 1000 eV. Chromatography was carried out by the ascending method with 0.1% alcoholic solutions of the samples on 40 × 90 mm plates. The length of a run was 74 mm, the angle of inclination of the plate 85°, and the time of saturating the chamber with solvent vapors was 10 min. Cases in which the lines of magnetic force coincided, were opposite to, and were perpendicular to the direction of development of the chromatogram and also circular lines were considered.

Tests were made with the 15 solvent systems most frequently used for separating mixtures of alkaloids. A tendency was observed to an increase in the R_f values both when the direction of chromatography coincided with the magnetic lines of force and also when the angle between them was 180°. The R_f values of caffeine, papaverine, and physostigmine increase by 0.2-0.3 in the chloroform—ethanol (8:2) system, and those of morphine and codeine by 0.1-0.15 in the benzene—acetone—ether—25% ammonia (4:6:1:0.3) system. We studied the influence of an electromagnetic field using a solenoid giving a uniform field of 12,000 G in the center of the coil. The chromatographic chamber was placed in it. The voltage of 76, 100, and 200 V, proportional to the strength of the current with the same resistance, was alternating.

In this case, the electromagnetic field affected the mobility of the substances, lowering or raising it. The R_f values of caffeine, papaverine, physostigmine and pilocarpine rose by 0.15-0.30 in the chloroform—ethanol (8:2), methanol—25% ammonia (99:1), and chloroform—acetone—25% ammonia (12:24:0.32) systems, while in the benzene—acetone—ether—25% ammonia (4:6:1:0.3) system the R_f values of caffeine, morphine, pilocarpine, and physostigmine were 0.2 smaller than in the controls. However, no proportional relationship was observed

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between the R_f values and the applied electromagnetic field. This is apparently connected with the magnetic permeability of the medium.

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ALKALOIDS OF SOME SPECIES OF *Thalictrum* GROWING IN GEORGIA

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Three species of *Thalictrum* growing in Georgia have been studied for their alkaloid content: *Th. collinum* Wallr., *Th. buschianum* Kem.-Nath., and *Th. foetidum* L. (family *Ranunculaceae*). *Th. buschianum* is endemic to the Caucasus [1-4]. All the plants were collected in the flowering phase (Table 1).

The sum of the alkaloids from the roots and epigeal organs of the plant was obtained by extracting the comminuted raw material with acidified methanolic solutions. The acid extracts after the methanol, had been distilled off, were alkalinized to pH 9, and the alkaloids were extracted exhaustively with chloroform. This gave the combined tertiary bases, which were separated into phenolic and nonphenolic fractions [5, 6].

The alkaline extracts remaining after chloroform treatment were treated with butyl alcohol. The quaternary bases passed into the latter [5].

From the combined quaternary bases from the roots of the *Th. collinum*, a substance with mp 86-88°C was isolated by sublimation. In its IR spectrum, strong absorption bands appeared in the 720 and 885 cm^{-1} regions, showing the presence of a substituted benzene ring, at 1700 cm^{-1} (C=O group), and broadened absorption bands at 3200 and 3400 cm^{-1} were assigned to hy-

TABLE 1

Plant	Site and date of collection (1982)	Sum of the alkaloids, %						Barberine content		
		herbage			roots			herbage	roots	
		phenolic	nonphenolic	quaternary bases	phenolic	nonphenolic	quaternary bases	detected on a chromatogram	detected on a chromatogram	isolated, %
Thalictrum collinum Wallr.	Village of Lukhvano, Tsagerskii region, July 23	0,06	0,03	—	0,12	0,11	1,2	—	+	—
Th. buschianum Kem.-Nath.	Village of Disevi Tskhinvali (Yugo-Osetinskaya AO), July 7	0,12	0,11	0,1	0,13	0,14	2,8	—	+	—
Th. foetidum L.	Village of Askhi, Tsagerskii region, July 24	0,15	0,29	1,01	0,13	0,16	3,8	+	+	0,2

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