An analysis of the $<^3J_{9,10}>$ values for (III) — 8.1 and 7.5 Hz, respectively, for the Z and E form of the acetamide grouping (the E form was identified from its NOE value of H_{17}—$\{H_{10}\} \approx 4\%$) shows that, in the first place, in contrast to (I) and (II), in (III) the D conformer is no longer predominant and, in the second place, the E form contains an appreciably lower proportion of the D conformer than Z form. The influence of the state of acetamide fragment on the proportion of the D conformer in (III) can be explained in terms of the Van der Waals interaction of the 7-Me group with the 18-Me group (E) and the oxygen atom (Z) of the acetyl residue. An analysis of the calculated values of the energies of these interactions ("6-exp" potential) with Dashevskii's parameters [5]) shows that the D conformation of the side chain of (III) is destabilized by the E conformation of the acetamide grouping by ≈ 0,5 kcal/mole more strongly than the Z conformation.

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ALKALOIDS OF *Delphinium ternatum*

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Continuing a study of the alkaloid composition of *Delphinium ternatum* [1], we have investigated the epigeal part and roots of the plant collected in the flowering phase on June 18, 1979 in the basin of R. Varzob. The customary chloroform extraction of the epigeal part yielded 0.15% of combined bases, which was separated into phenolic and nonphenolic fractions. Crystals isolated from the ether-soluble nonphenolic fraction proved, on TLC, to be a mixture of two substances. Chromatography on a column of alumina [eluent: hexane—ethyl acetate (1:1)] yielded delcorine [2] and a base (I) with mp 215-217°C (acetone). From the mother liquor after the separation of the crystals, an additional amount of base (I) was isolated by chromatography on a column of alumina [eluent: ether—chloroform (1:25)].

The IR spectrum of (I) is characteristic for diterpene alkaloids of the lycoctonine type, having absorption bands at 1100 cm^{-1} (ether C—O bonds) and 3475 cm^{-1} (hydroxy groups). The NMR spectra ($CDCl_3$, ppm, δ scale, HMDS = 0) revealed signals in the form of a three-proton singlet at 0.86 from a $\rangle C{-}CH_3$ group; a three-proton triplet at 0.98 from a $\rangle N{-}CH_2{-}CH_3$ group; three-proton singlets at 3.16, 3.25, and 3.33 from three methoxy groups; a one-proton triplet at 3.59 from β-H at C-14; a one-proton singlet at 4.11 from α-H at C-6; and two one-proton singlets at 4.92 and 5.02 from a CH_2O_2 group.

Analysis of the results that we had obtained and their comparison with information in the literature enabled base (I) to be identified as delpheline [3-5]. This is the first time that delpheline has been isolated from plants of the family *Ranunculaceae* growing in the territory of the USSR.

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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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