ALKALOIDS OF *Veratrum oxysepalum*. II.

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The combined alkaloids were obtained by the diethyl ether extraction of the roots with rhizomes of *Veratrum oxysepalum* Turc. [1]. Separation was performed by column chromatography on cellulose impregnated for formamide [2] in the chloroform system. The working up of the fractions yielded three alkaloids: with R_f 0.18 (I), 0.36 (II), and 0.47 (III) (system 1: chloroform saturated with formamide; Leningrad type M [slow] paper impregnated with formamide).

Alkaloid (I) had the formula $C_{27}H_{43}NO_2$, mp 239-241°C (ethanol), $[\alpha]_D^{22}$ + 18° (c 0.41; ethanol). The UV spectrum of (I) in concentrated sulfuric acid (0.37 mg in 10 ml) obtained 24 h after dissolution had λ_{max} 250, 323, 444, 504 nm, and its R_f value in system 1 coincided with that of rubijervine; a mixture of the compound with rubijervine gave no depression of the melting point [3]. Alkaloid (II) had the formula $C_{36}H_{51}NO_{10}$, mp 270-272°C (chloroform), $[\alpha]_D^{23}$ − 27.1° (c 0.34; chloroform). The IR spectrum of (II) (0.13 mg in 10 ml of concentrated sulfuric acid) had λ_{max} 229, 322, 411, 487 nm. IR spectrum (KBr), cm^{-1}: 1741 (ester carbonyl), 1605, 1526 (aromatic ring). In the products of its alkaline hydrolysis [4] the presence of the amino alcohol zygadenine [system 2: butan-1-ol—acetic acid—water (4:1:5)] and veratric acid [system 3: butan-1-ol—1.5 N aqueous ammonia (1:1)] was established by paper chromatography with markers. The R_f value of the alkaloid in system 1 coincided with that of veratroylzygadenine and a mixture of the compound with an authentic sample gave no depression of the melting point [5].

Alkaloid (III) had the formula $C_{37}H_{59}NO_{11}$, mp 202-204°C (benzene), $[\alpha]_D^{20}$ − 7° (c 0.63; pyridine). IR spectrum (KBr), cm^{-1}: 1738 (ester carbonyl), 1250 (ester/ether band). The UV spectrum of the alkaloid in concentrated sulfuric acid (0.45 mg in 10 ml) obtained 24 h after dissolution had λ_{max} 246, 315, 406, 528 nm and had no region of agreement with the spectrum taken after 1.5 h (the amino alcohol germine) [6]. In the products of alkaline hydrolysis (50 mg of the alkaloid, 2 ml of 85% methanol, and 21 mg of potassium carbonate, 20-23°C, 24 h), the presence of the amino alcohol germine (system 2) and of α-methylbutyric and α-hydroxy-α-methylbutyric acids (system 3) was established by paper chromatography with markers. Taking into account the biogenetic nature of the structure of the ester alkaloids of the false hellebore [7], the acyl residues of the acids must occupy positions 3 and 15, respectively, in the amino alcohol, which corresponds to the alkaloid germerine.

The results of analysis were confirmed by the agreement of the R_f values with those of a sample of germerine and by the absence of a depression of the melting point of a mixture.

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ALKALOIDS OF *Rhinopetalum korelini*

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The plant *Rhinopetalum korelini* Fisch. (family Liliaceae) has not been studied chemically [1]. We have investigated the epigeal part collected on May 10, 1974, in the village of Babadurmez, Turkmen SSR, in the period of mass fruit bearing. A mixture of bases was extracted from the plant with chloroform. From the extract, after appropriate working up, were obtained the combined ether-soluble (0.07%) and chloroform-soluble (0.08%) alkaloids, amounting to 0.15% on the weight of the dry plant.

The addition of methanol to the ether fraction yielded a mixture of two substances (0.11 g) which was passed through a column of silica gel (KSK, 150-250 mμ). Elution was carried out with chloroform—methanol (10:2), and 15 fractions (10 ml each) were collected. The treatment of fractions 6-15 with methanol gave the alkaloid (I) with mp 255-257°C (methanol). The combined chloroform alkaloids (1.14 g) were passed through a column of silica gel, and elution with chloroform—methanol (10:2 and 10:4) gave 43 fractions. After rechromatography on alumina (activity grade II), fractions 1-5 yielded an alkaloid (II) with mp 209-212°C, which was identified as solanidine (mixed melting point, R_f) [2]. Fractions 14-19 (0.26 g) yielded the alkaloid (I). The treatment of fractions 20-30 with methanol gave the alkaloid (III) with mp 301-303°C (methanol). The chloroform—methanol (10:4) eluate deposited crystals with mp 272-274°C (methanol), $[\alpha]_D + 17.7°$ (c 1.92; pyridine) of an alkaloid (IV).

A study of the products of hydrolysis of (I) and (III), and also a comparison of their IR spectra and melting points with those of rhinoline and rhinolinine showed that (I) and (III) were identical with rhinoline and rhinolinine, respectively [3, 4].

Thus, solanidine, rhinoline, and rhinolinine have been isolated for the first time from *Rhinopetalum korelini*.

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