$[\alpha]_D$ −14.5° (c 1.0; chloroform); its picrate had mp 232–235° C. The same constants characterize the alkaloid d-otosenine [1, 2]. However, the base differs from d-otosenine by the sign of its rotation and it is therefore *l*-otosenine, which has not been described in the literature. From the methanolic mother liquor we isolated 0.6 g of renardine [3].

By separating the chloroformic total alkaloids according to the solubility of the bases in acetone, we obtained 0.4 g of jacobine [4] with mp 225–226° C (acetone).

From 135 g of the epigeal part of H. acutiflorum K. et K. collected on 11 June 1967 at the end of the flowering period in the Kyzyl-Kum by chloroform extraction we obtained 0.7 g of ethereal, 0.77 g of chloroformic, and 1.32 g of reduced total alkaloids (2.06% of the weight of the dry plant). The separation of 2.79 g of the total bases yielded 1.77 g of heliotrine [5, 6], and the mother liquors by reduction with zinc in hydrochloric acid gave an additional 0.3 g of this alkaloid.

Paper chromatography of the mother liquors in the butanol–acetic acid–water (100 : 5 : 100) system gave two spots with R_f 0.49 and 0.69, the first of which corresponded to heliotrine. Thus, the mother liquor contains another alkaloid besides heliotrine.

From 247 g of H. transoxanum Bge (Kyzyl-Kum), 11 June 1967, we obtained 0.92 g of ethereal, 1.75 g of chloroformic, and 1.43 g of reduced total alkaloids (1.65% of the weight of the dry raw material).

The separation of 4.1 g of the total bases yielded 2.97 g of heliotrine, and the mother liquors by reduction with zinc and hydrochloric acid gave 0.45 g. According to paper chromatography, the mother liquor contained another alkaloid, with R_f 0.71.

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STRUCTURE AND CONFIGURATION OF KORSEVERILINE

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By chloroform extraction from the epigeal part and bulbs of Korolkowia sewerzowii Rgl. we have obtained 2.3%, 1.4, 1.3, and 1.7%* of total alkaloids, respectively. By separating the ethereal part of the 2.3% of the mixture of alkaloids with respect to their basicities and solubilities in methanol and acetone, we isolated korsine (8%) [1] and a new alkaloid korseveriline (30%). A similar separation of the 1.4% of total alkaloids gave korsine (5%), korseveriline (20%), that of the 1.3% of total alkaloids gave korsine (3%) and korseveriline (50%), and that of the 1.7% of total alkaloids gave korsine (2%) and korseveriline (40%).

Korseveriline ($C_{27}H_{45}O_3N$) has mp 240–242° C, $[\alpha]_D$ −15° (c 0.8; ethanol), mol. wt. 431 (mass spectrometry), thiocyanate mp 177–178° C, methiodide mp 300–301° C. Korseveriline is a saturated tertiary base containing two secondary and one tertiary hydroxyl and no N-methyl group. IR spectrum, ν_{max}: 3375, 1130, 1055, 1028, 1100–990 (–OH), 2915, 2860, 1465, 1443 ($-CH_3$), and 2773 cm^{-1} (trans-quinolizidine). Diacetylkorseveriline (I) was obtained

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*In the first two cases, the plant was collected in the flowering stage in the Sary-Agach region of the south Kazakhstan Oblast and in the other two cases in the flowering stage at Khamzaabad in the Fergana Oblast.

Chemical Shifts (τ)

Substance	(S), 3H, C−19 CH_3	(D), 3H, C−21 CH_3	(D), 3H, C—27 CH_3	(S) 3H, 3α $-OCOCH_3$	(S), 3H, 6β $-OCOCH_3$	(M), βH for C_3	(M), αH for C_6
(I)	9.11	9.21	9.21	8. 5	8.03	4.97	5.14
(II)	9.15	9.21	9.21	—	—	—	—
(III)	9.34	9.22	9.19	—	—	—	—

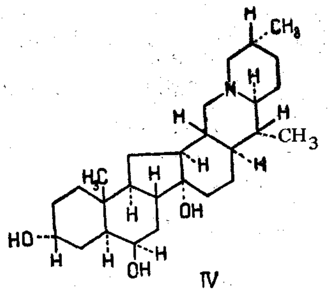
Note: S—singlet, D—doublet, M—multiplet.

with mp 172–173° C and composition $C_{31}H_{49}O_5N$. Its IR spectrum ν_{max}: 3500–3400 (OH), 1738, 1255, 1235, 1025 cm^{-1} ($OCOCH_3$). The oxidation of korseveriline with chromic acid led to the formation of korseverilinedione $C_{27}H_{41}O_3N$ (II) with mp 217–218° C, mol. wt. 427 (mass spectrum), IR spectrum, ν_{max}: 3430 (OH) and 1715 cm^{-1} ($>$ CO). The melting point of its perchlorate was 274–275° C, of its hydrobromide 322–323° C, and of its hydrochloride 335–336° C. The Huang-Minlon reduction of substance (II) formed desdioxotetrahydrokorseverilinedione (III) with mp 166–167° C, mol. wt. 399 (mass spectrum), composition $C_{27}H_{45}ON$. The hydrochloride had mp 180–182° C, the hydrobromide 308–309° C, and the methiodide 290–291° C.

In the mass spectrum of korseveriline, (II) and (III), there are peaks of ions characteristic for C-nor-D-homosteroid alkaloids, the most characteristic of them being those with m/e 98, 111 (100%), 112, 162, 164, 178 (M − 18), (M − 15) and (M^+).

The NMR spectra of the bases (I), (II), and (III) have signals from one tertiary and two secondary methyl groups (table).

The information given permits the assumption that korseveriline has the heterocyclic skeleton of imperialine. In it rings A and B have the trans linkage, the hydrogen at C_5 has the α-orientation, and the secondary hydroxy groups are in the α- and β-positions at C_3 and C_6, respectively [2]. In view of the formation of fragments with m/e 162, 164, and 178 [3], produced from the heterocyclic parts of the molecule, the most probable position for the tertiary hydroxy group is at C_{14}, which in the skeleton of the C-nor-D-homosteroids must occupy the α-position. From the known chemical shifts of the C-21 and C-27 methyl groups of the bases (I), (II), and (III) in korseveriline rings A and B, must be attached to trans-quinolizidine part of the molecule as in verticine, the C-21 and C-27 methyl groups having the α-orientation [4]. Consequently, configuration (IV) may be assigned to korseveriline.



IV

The NMR spectra were taken in deuterochloroform on a JNM-4H-100 instrument (with hexamethyldisiloxane as internal standard), the IR spectra (molded tablets with KBr) on a UR-20 instrument, and the mass spectra on an MKh-1303 instrument with a glass inlet system.

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