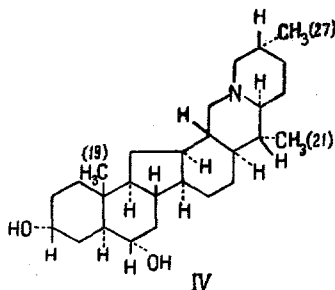


configuration of petilinine. From the value of their chemical shifts, the C-21 and C-27 methyl groups have the  $\alpha$ -orientation [5]. Thus, configuration (IV) may be put forward for petilinine.



The NMR spectra were taken in deuteriochloroform on a JNM-4H-100 instrument (with hexamethyldisiloxane as internal standard), the IR spectra (compressed tablets with KBr) on a UR-10 instrument, and the mass spectra on an MKh-1303 instrument with a glass inlet system.

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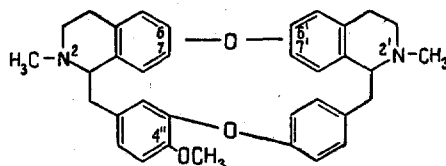
UDC 547.944/945+541.6+543.42

#### THE NMR SPECTRA OF THALMINE, O-METHYLTHALICBERINE, THALSIMINE, AND FOETIDINE

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In the NMR spectrum of thalmine (I) [1], two three-proton signals of N-CH<sub>3</sub> clearly appear at 7.90 ppm in position 2 and at 7.45 ppm in position 2'. The positions of these signals in O-methyl-I are, respectively, 7.90 and 7.43 ppm. The singlet at 6.23 ppm in substance (I) relates to the OCH<sub>3</sub> group in position 6 and the six-proton signal at 6.17 ppm corresponds to two OCH<sub>3</sub> groups at 7' and 4". In the spectrum of O-methyl-I, in addition to those mentioned, there is an additional signal of the 6'-OCH<sub>3</sub> group at 6.37 ppm. The signals of the ten aromatic protons in (I) and in O-methyl-I are in the 4.15-3.10 ppm region. The signal of the proton of the hydroxy group in (I) appears at 5.00 ppm.



The values of the chemical shifts (CS) of the signals of the methoxy groups in O-methylthalicberine (II) are 6.20, 6.23, 6.31, and 6.44 ppm. The N-CH<sub>3</sub> group in (II) resonates at 7.52 and 7.99 ppm.

The absence of a methyl group on the nitrogen in position 2' in thalsimine (III) [2] substantially affects the nature of its NMR spectrum, namely: the methoxy groups resonate in a narrow region at 6.16-6.26 ppm and the signal of the N-CH<sub>3</sub> in position 2 appears in the form of a three-proton doublet at 7.80 ppm (J = 10.0 Hz).

In the spectrum of the aporphine-benzyltetrahydroisoquinoline alkaloid foetidine (V) [3], the signals of the two  $N-CH_3$  groups give singlets at 7.70 and 7.63 ppm, and the six  $OCH_3$  groups form five signals with a total intensity of 18 proton units. The one-proton signal in the weak field at 1.93 ppm corresponds to the aromatic proton in position 4 of the aporphine moiety of the molecule and the other six protons of the ring resonate in the 3.95–3.27 ppm region.

The relationship between the resonance position of the substituting groups and the chemical structure of the alkaloids (I)–(IV) agrees in the main with the literature data given for the bisbenzylisoquinoline bases [4].

These spectra were obtained on a JNM-4H-100/100 MHz instrument in deuteriochloroform with HMDS as the internal standard ( $\tau$  scale).

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#### STRUCTURE OF UNGMINORIDINE

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In the separation of the alkaloids from the leaves of *Ungernia minor* by the acetone treatment of the combined chloroformic alkaloids, in addition to lycorine, ungminorine, and ungeremine [1], an alkaloid with mp 193–194° C (from methanol) with the composition  $C_{16}H_{19}O_4N$  was isolated and was given the name ungminoridine. The IR spectrum of the latter has absorption bands at  $3400\text{ cm}^{-1}$  (hydroxy group) and at 931 and  $1040\text{ cm}^{-1}$  which are characteristic for a benzene ring with a methylenedioxy group.

From a comparison of the UV absorption spectrum of ungminoridine [ $\lambda_{\max}$  240, 290 m $\mu$  ( $\log \epsilon$  3.50, 3.54)] with that of dihydrolycorine it can be seen that ungminoridine belongs to the alkaloids of the lycorine type.

In the NMR spectrum of ungminoridine taken in deuteriochloroform there are well-defined signals of the protons of an aromatic ring at  $\tau = 3.08$  and  $3.40$  ppm, each with an intensity of one proton unit. A signal located in the weak-field region (3.08) evidently relates to proton 8 [2, 3]. A signal at  $\tau = 4.13$  (intensity 2 proton units) corresponds to an  $-OCH_2O-$  group and one at  $\tau = 6.16$  ppm to the protons of OH groups. The assignment of the signal at  $\tau = 6.16$  ppm to OH is confirmed by the fact that in the NMR spectrum of ungminoridine taken in  $CD_3OD$  it completely disappeared. The absence from the NMR spectrum of ungminoridine of a signal at  $\tau = 4.50$  shows the absence of a 3a–4 double bond [2]. The mass spectrum of ungminoridine has six characteristic peaks— $M^+$  289, 288, 271, 254, 252, 250 m/e—which are analogous to the spectrum of dihydrolycorine [4, 5].

Thus, the information given permits us to put forward the following structural formula for ungminoridine:

