NITRARAMINE N-OXIDE FROM *Nitraria schoberi*

N. Yu. Novgorodova, S. Kh. Maekh,
and S. Yu. Yunusov

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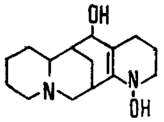
From the sum of the bases of the epigeal part of *Nitraria schoberi* L., collected on May 10-25, 1968, in the settlement of Ayakagitma, Bukhara oblast (Kyzylkum), we have isolated a crystalline, optically inactive, base (I) with mp 220-221°C (ethanol) and 216-217°C (petroleum ether). Its elementary analysis showed the composition $C_{15}H_{24}O_2N_2$.

The base showed no absorption in the UV region. In the IR spectrum (KBr) strong bands were found in the regions 3400-3030 cm^{-1} (OH) and 925, 945, and 965 cm^{-1} (N—O) [1]. In the mass spectrum there are the peaks of ions with m/e 264 (M^+) 100%, 248 $(M-16)^+$ 18%, 247 $(M-17)^+$ 41%, 219, 204, 190, 176, 162, 150, 138, 125, 106, 98, 96 and 83. The NMR spectrum (CF_3COOH, δ scale) shows the following signals: one-proton doublets at 4.63 and 4.16 ppm (J = 1-2 Hz), singlet at 3.74 ppm (1H), and multiplets at 3.36 (3H), 2.73 (1H), and 1.48 ppm (17H). The alkaloid is sparingly soluble in all organic solvents but is readily soluble in water. The presence in the IR spectrum of (I) of the characteristic bands for N-oxides, the presence of strong peaks of the ions $(M - 16)^+$ and $(M - 17)^+$, and the ready solubility of the base in water shows its N-oxide nature. The base is not reduced by zinc in hydrochloric acid, but hydrogenation with sodium tetrahydroborate in methanol and with lithium tetrahydroaluminate in ether gave a substance with mp 85-86°C identified from its IR spectrum and by a mixed melting point as nitraramine (II) [2]. In addition, the oxidation of (II) with 5% hydrogen peroxide in water yielded (I) (IR and mass spectra and mixed melting point).

The base (I) gave a positive reaction with Fehling's reagent, showing the presence of a hydroxylamine grouping [3]. In addition, the acetylation of (I) with acetic anhydride in pyridine yielded an O-acetyl derivative with mp 142-143°C (petroleum ether). IR spectrum: 3460 cm^{-1} (OH) and 1745 cm^{-1} (ester carbonyl), and the bands at 925, 945, and 965 cm^{-1} were retained.

Thus, the alkaloid isolated is nitraramine N-oxide and has the structure



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