

THE STRUCTURE OF SCHOBERINE

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Continuing an investigation of the alkaloids of the epigeal part of *Nitraria schoberi* L. [1] we have isolated a new alkaloid schoberidine (I) with the composition $C_{20}H_{21}N_3$, mol. wt. 303 (mass spectrometrically).

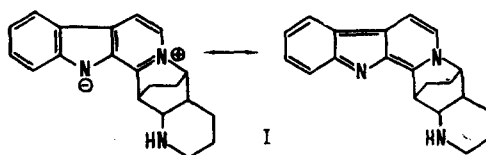
Schoberine, a yellow substance with mp 204–205°C, has a yellow-green fluorescence in solution. With ethanolic HCl it gives a salt with mp 267°C (ethanol).

On comparing the compositions of schoberidine and nitrarine it was possible to conclude that (I) is a tetrahydro derivative of the latter. The mass spectrum of (I) had the following peaks of ions: m/e : 303 (M^+), 275, 274, 260, 259, 220, 219 (100%), 195, 182, 169, 168, 83. The ion with a mass of 275 ($M - 28$) is apparently formed by the ejection of a dimethylene group from the molecular ion. The maximum intensity of the peak of the ion with m/e 219 due to a tetramethylene- β -carboline fragment (formed by the ejection of a piperidine ring) shows the presence of a factor stimulating the formation of this ion. Such a factor could be a double bond in the third position of the nitrarine molecule. Furthermore, the difference of the mass of this ion from that of the analogous ion (223) in the mass spectrum of nitrarine shows that both the double bonds are present in the β -carboline part of the molecule.

The change in the UV spectrum of a schoberidine salt with a change in the pH of the solution of the alkaloid is characteristic. Below we give the features of the UV spectra for (I) and literature figures for the anhydronium bases melionine E and melionine F [2] (λ_{max} , nm):

Medium	Schoberidine	Melionine E	Melionine F
Ethanol	254, 308, 372	253, 308, 377	253, 308, 377
Alkali	284, 330, 415	284, 332, 416	284, 332, 415–432

In ethanol, the maxima of the absorption of a β -carbolinium ion appear which undergo a slight bathochromic shift on the addition of acid. In an alkaline medium, a considerable bathochromic shift of the bands is observed. This behavior is typical for anhydronium bases and has been widely studied in the literature [3]. Consequently, schoberine is an anhydronium base and has the structure



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