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THE ALKALOIDS OF THALICTRUM SIMPLEX. THE STRUCTURE OF THALICTRICINE

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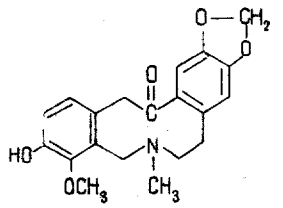
We have continued our study of the alkaloids of the roots of T. simplex L. [1]. The chloroform fraction of the mixture of bases was treated with acetone. The soluble part was chromatographed on a column of alumina, and from fractions 5-6 of the chloroform eluate were isolated golden orange crystals with mp 263°-265° C, identical with thalicmidine [2].

The phenolic fraction of the ethereal part of the mixed bases was dissolved in methanol, and white prismatic crystals of an optically inactive base $C_{20}H_{21}NO_5$ with mp 261°-263° C (methanol) were obtained. The base is sparingly soluble in all organic solvents and in water; it dissolves in aqueous alkali and contains N-methyl, methoxy, and methylenedioxy groups. Its IR spectrum has absorption bands at 3640 cm^{-1} (OH), 2900, 1240, 1130 (OCH_3), 2860 ($N-CH_3$), 1640 (C=O), 1040, 930, (O_2CH_2), 1615, 1580, and 1505 cm^{-1} (stretching vibrations of an aromatic ring). UV spectrum: λ_{max} 288 mμ (log ε 3.95).

The substance obtained proved to be new, and we have called it thalictricine.

The mass spectrum of the alkaloid (MKh-1303 instrument, 40V, 0.4 mA, 135° C) has peaks with m/e 335 (M^+), 269, 207, 206 (the principal peak), 192, and 150. The features of the mass spectrum of the base agree with the data given for alkaloids of the cryptopine type [3].

These properties of thalictricine show that it belongs to the alkaloids of the cryptopine type. The methylation of thalictricine with an ethereal solution of diazomethane gave a base with mp 164°-165° C (acetone), the UV, IR, and NMR spectra of which were identical with those of β-allocryptopine [1]. Since the properties of thalictricine differ from those of hunnemanine [4], the only possible structure remaining for it is as follows:



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