THE STRUCTURE OF VINERININE

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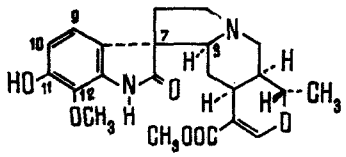
It has been shown previously [1] that the new oxindole alkaloid vinerinine (I) isolated from Vinca erecta is a monomethyl derivative of majdine, but the mutual positions of the OCH_3 and OH groups in the aromatic ring of (I) remained undetermined. In order to establish the position of the OCH_3 group we have studied the NMR spectrum of (I) in deuterochloroform and deuterobenzene (the spectra were obtained on a JNM-4H-100/100 MHz spectrometer; c 5%; 0 – TMS; δ scale). On passing from deuterochloroform to deuterobenzene the difference in the chemical shift (CF) of the protons of the OCH_3 group in (I) was $\Delta = 0.31$ ppm. On the basis of the results of an analysis of the CS of the OCH_3 groups of majdine it has been established previously that for the 11-OCH_3 group $\Delta_{CDCl_3}^{C_6D_6}$ is 0.52 ppm, and in the case of the 12-OCH_3 group it is 0.26 ppm. The results of a comparison of the values of $\Delta_{CDCl_3}^{C_6D_6}$ for the OCH_3 groups of majdine and vinerinine shows that in (I) the OCH_3 group is present in position 12 and the substance has the structure of 11-demethylmajdine.



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A confirmation of this is the fact that in the NMR spectrum of the deuterium derivative of vinerinine obtained by deuterating vinerinine with heavy water in dimethylformamide, the signal of the only aromatic proton appears in the form of a singlet with δ 6.82 ppm the CS of which corresponds to the proton at C_9, which shows the replacement of the hydrogen atom by deuterium at C_{10} in the ortho position to an OH group [3]. In addition, the location of the CH_3 group at position 12 is also shown by the absence from (I) of an intramolecular nuclear Overhauser effect between the signals of the Ar–OCH_3 protons and the aromatic protons. Thus, as a result of the analysis of the characteristics of the NMR spectra in $CDCl_3$ and C_6D_6 solutions, and also of the deuterium derivative the mutual positions of the OH and OCH_3 groups in vinerinine have been established unambiguously.

LITERATURE CITED

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