ALKALOIDS OF THE WOOD OF *Liriodendron tulipifera*

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We have previously reported the isolation from the leaves of <u>L. tulipifera</u> L. of the new aporphine alkaloids lirinine and O-methyllirinine [1, 2].

We have investigated the wood of this tree collected in May, 1972, in the Tashkent Botanical Garden. Ordinary chloroform extraction gave 0.09% of combined ether-soluble and 0.06% of combined chloroform-soluble alkaloids. The ethereal fraction of the mixture of bases was separated into nonphenolic and phenolic fractions. The nonphenolic fraction of the combined alkaloids was chromatographed on silica gel.

A benzene–methanol (99 : 1) eluate yielded dark-yellow crystals of a base with the composition $C_{19}H_{15}NO_4$, mol. wt. 321 (mass spectrometry) with mp 162-164°C (from chloroform), R_f 0.59 in the benzene–methanol (4 : 1) system. The alkaloid proved to be new, and we have called it liridine. On elution with a mixture of benzene and methanol (95 : 5), a base with the composition $C_{17}H_9NO_3$, mp 271-273°C (from chloroform) was obtained. Its R_f value was 0.35, and by its IR spectrum and a mixed melting point it was identified as liriodenine.

The UV spectrum of liridine has absorption maxima at 238, 276, and 440 nm (log ε 4.32, 4.36, 3.80) undergoing bathochromic shifts on acidification: $\lambda_{max}^{ethanol + HCl}$ 243, 282, 450 nm (log ε 4.31, 4.35, 3.62).

The IR spectrum showed absorption bands at 1655 cm^{-1} for a conjugated carbonyl group and at 760 cm^{-1} due to the deformation vibrations of the C–H groups of four adjacent aromatic protons. Consequently, liridine belongs to alkaloids of the dibenzo[de,g]quinolin-F-one type [3] in which ring D contains no substituents. On studying the NMR spectrum of liridine and comparing it with the spectrum of liriodenine (Table 1), we found that the nature of the signals of the aromatic protons was the same, but only in liridine was there no signal of an aromatic proton at C_3. Consequently, there must be a methoxy group in this position.

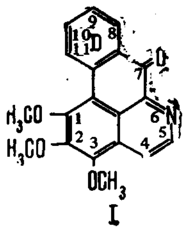

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TABLE 1

Compound	$-CH_2O_2$		$-OCH_3$			Aromatic protons						
	c-1	c-2	c-1	c-2	c-3	c-3	c-8	c-9	c-10	c-11	c-4	c-5
Liriodenine	3,78 (2H) s.		—	—	—	2,89 s.	2,65 — 1,22 (6H) m					
Liridine	—		6,1 (9H) s.			—	2,71 — 1,13 (6H) m					

<u>Note.</u> JNM-4H-100/100 MHz instrument (in CF_3COOH with HMDS as internal standard, τ scale, s – singlet; m – multiplet).

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On the basis of the facts given, liridine has the structure of 1,2,3-trimethoxydibenzo [de, g]quinolin-7-one (I).

It must be mentioned that substance (I) has been synthesized previously [4] but we are the first to have found it in a plant.

LITERATURE CITED

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