d-ISOLAURELINE – A NEW ALKALOID FROM *Liriodendron tulipifera*

R. Ziyaev, A. Abdusamatov, and S. Yu. Yunusov

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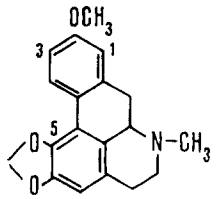
Continuing the separation of the nonphenolic fraction of the total alkaloid of the leaves of L. tulipifera L. (tulip tree) [1-3] on a column of silica gel, we have isolated from a benzene–methanol (98:2) eluate d-isoroemerine [2], liriodenine [3, 4], lysicamine [5], and a new alkaloid – d-isolaureline (I).

The base has the composition $C_{19}H_{19}NO_3$ (M^+ 309), hydrochloride with mp 243-245°C (decomp.), $[\alpha]_D^{24}$ + 35 (c 0.25, water); R_f 0.68 in the ethyl acetate–methanol (9:1) system in a thin layer of silica gel.

The UV spectrum of (I) [λ_{max} 218, 283 nm (log ε +4.46, 4.26)] is characteristic for 2,5,6-trisubstituted aporphine bases [6]. The IR spectrum of the alkaloid has absorption bands at (cm^{-1}) 2850, 1255 ($-OCH_3$), 1605 (aromatic nucleus), and 1060 and 940 (OCH_2O).

The NMR spectrum of d-isolaureline shows signals (τ scale, ppm) from the protons of an $>N-CH_3$ group (7.54 ppm, 3H, singlet) and a methoxy group (6.24 ppm, 3H, singlet,). Two one-proton doublets at 4.05 and 4.19 ppm (J = 1.5 Hz) in the spectrum of the alkaloid are analogous to those observed in the NMR spectrum of dicentrine and roemerine, which are ascribed to a methylenedioxy group located in positions C_5 and C_6 of the aporphine nucleus [7].

The presence in the spectrum of (I) of two one-proton singlets at 3.58 and 3.28 ppm due to two aromatic protons in positions C_7 and C_1 and of two one-proton doublets at 2.09 and 3.20 ppm (J = 7.5 Hz) corresponding to aromatic protons at C_4 and C_3 shows that the methoxy group is located at C_2.



Consequently, substance (I) is d-isolaureline [8] and we are the first to have found it in a plant.

LITERATURE CITED

1. R. Ziyaev, A. Abdusamatov, and S. Yu. Yunusov, Khim. Prirodn. Soedin., 505 (1973).
2. P. Ziyaev, A. Abdusamatov, and S. Yu. Yunusov, Khim. Prirodn. Soedin., 108 (1974).
3. A. Abdusamatov, R. Ziyaev, and S. Yu. Yunusov, Khim. Prirodn. Soedin., 112 (1974).
4. M. S. Yunusov, S. T. Akramov, and S. Yu. Yunusov, Dokl. Akad. Nauk UzSSR No. 5, 38 (1966).
5. N. Katsui and K. Sato, Tetrahedron Lett., 6257 (1966).
6. M. Shamma and W. Slusarchyk, Chem. Rev., 64, 74 (1964).
7. S. Goodwin, J. N. Shoolery, and L. F. Johnson, Proc. Chem. Soc., 306 (1958).
8. M. Tomita and T. Kitamura, J. Pharm. Soc. Jap., 80, 21 (1961).

Institute of the Chemistry of Plant Substances, Academy of Sciences of the Uzbek SSR. Translated from Khimiya Prirodnykh Soedinenii, No. 5, p. 685, September-October, 1974. Original article submitted May 7, 1974.