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BENZO[c][2,7]NAPHTHYRIDINE

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We draw attention to an error in Chemical Abstracts, for, indexed under benzo[c][2,7]naphthyridine (1) are references[1a-1d] concerning instead its isomer (2). Compound (2) is, in the nomenclature used by Chemical Abstracts, 3,8-phenanthroline; the authors of the papers cited, using a different system, call (2) 2,7-phenanthroline.

In the course of a study of the alkaloids of Lolium perenne L. (Gramineae),[2] we have synthesised the hitherto unreported benzo[c][2,7] naphthyridine from 1-(2,6-dichlorobenzyl)-1,4-dihydro-4-(2-oxocyclohexylidine)-pyridine-3-carbonamide (3),[3] by treatment with concentrated hydrobromic acid under pressure to give 5(6H)-oxo-7,8,9,10-tetrahydrobenzo [c][2,7]naphthyridine (4), m.p. 259°. Dehydrogenation with palladised charcoal in refluxing diphenyl ether converted this into 5(6H)-oxobenzo [c][2,7]naphthyridine (5), m.p. 300° (decomp.), an isomer of the alkaloid perlolidine (6).[4] Treatment of (5) with phosphorus pentasulphide, followed by Raney nickel in dimethylformamide gave benzo[c][6,7] naphthyridine (1), m.p. 140-142° m/e 180.0687 ($C_{12}H_8N_2$ requires 180.0688), ^{1}H n.m.r. τ ($CDCl_3$) 0.63 [broad s, 2, H(C-4) + H(C-5)], 1.07 [d,1, J 6 Hz, H(C-1)], 1.70 [d, 1,J 6 Hz, H(C-2)], 1.3-2.4 [m, 4, aromatic]. Like perlolidine, both compounds (5) and (1) dissolve in dilute aqueous hydrochloric acid to give pale yellow solutions that show a strong blue fluorescence in daylight.

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Satisfactory analytical and spectroscopic data have been obtained for compounds (1), (4), and (5).

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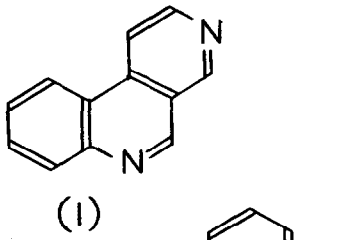
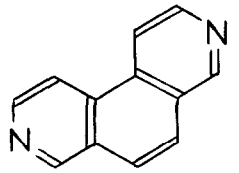


(1)



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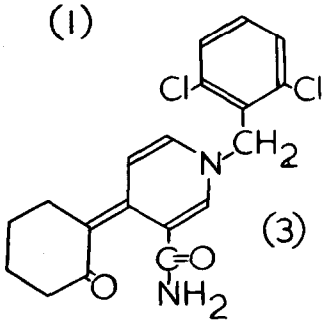

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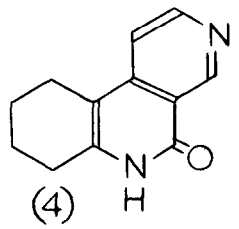

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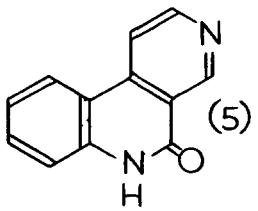

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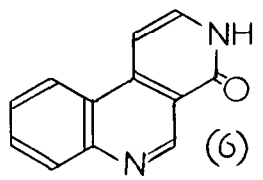

(6)

[1a] H.-H. Perkampus and G. Kassebeer, Annalen, 1966, 696, 1; Chem. Abs., 1966, 65, 20113e; [b] H.-H. Perkampus, Z. Naturforsch. 1967, 22a, 1430; Chem. Abs. 1968, 68, 100416n; [c] H.-H. Perkampus, A. Knop, and J. V. Knop, ibid, 1968, 23a, 840; Chem. Abs. 1968, 69, 91602m; [d] H.-H. Perkampus and A. Knop, ibid, 1968, 23a, 849; Chem. Abs., 1960, 69 101446e.

[2] J. A. D. Jeffreys, J. Chem. Soc. (C) 1970, 1091 and references cited.

[3] F. Krohnke, K. Ellegast and E. Bertram, Annalen, 1956, 600, 176.

[4] M. A. Akhtar, W. G. Brouwer, J. A. D. Jeffreys, C. W. Gemenden, W. I. Taylor, R. N. Seelye and D. W. Stanton, J. Chem. Soc. (C), 1967, 859, and references cited.