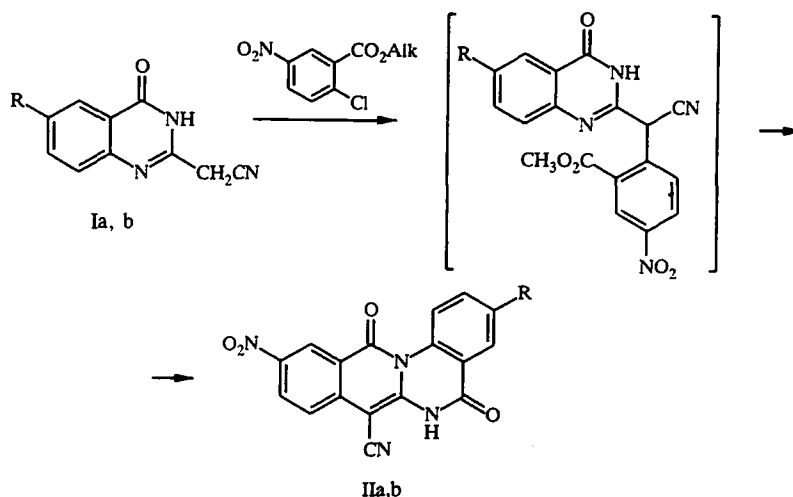


NEW ROUTE FOR THE SYNTHESIS OF ISOQUINO[2,3-*a*]QUINAZOLINES

Yu. M. Volovenko

Only one method is known for the synthesis of derivatives of the isoquino[2,3-*a*]quinazoline system. It is based on the reaction of *o*-(bromomethyl)phenylacetone nitrile with ethyl anthranilate [1].

We have found that the isoquino[2,3-*a*]quinazolines (IIa,b) are formed by the reaction of alkyl 2-chloro-5-nitrobenzoates with 6-R-2-cyanomethylquinazolones-4 (Ia,b) in boiling dimethylformamide in the presence of an equimolar amount of potash.



I, II a R = H, b R = Cl; Alk = Me, Et

It is likely that the reaction begins with the alkylation of compounds Ia,b at the active methylene group with subsequent intramolecular acylation of the nitrogen atom of the heterocycle, leading to closure of the isoquinoline nucleus.

10-Nitro-5,12-dioxo-5,6-dihydro-12H-isoquino[2,3-*a*]quinazoline-7-carbonitrile (IIa). Yield 87%. M.p. above 300°C (dimethylformamide). IR spectrum (KBr): 2200 (C=N), 1685 cm⁻¹ (C=O). ¹H NMR spectrum (100 MHz, DMSO-D₆): 7.65 (1 H, t, *J* = 8 Hz, 3-H), 7.78 (1 H, d, *J* = 9 Hz, 8-H), 7.95 (1 H, m, 2-H), 8.20 (1 H, dd, *J*₄₃ = 8, *J*₄₂ = 2 Hz, 4-H), 8.58 (1 H, dd, *J*₉₈ = 9, *J*₉₁₁ = 2.5 Hz, 9-H), 8.94 (1 H, d, *J* = 8 Hz, 1-H), 8.96 ppm (1 H, d, *J* = 2.5 Hz, 11-H). Found, %: N 16.5. Calc. for C₁₇H₈N₄O₄, %: N 16.8.

10-Nitro-5,12-dioxo-3-chloro-5,6-dihydro-12H-isoquino[2,3-*a*]quinazoline-7-carbonitrile (IIb). Yield 83%. M.p. greater than 300°C (dimethylformamide). IR spectrum (KBr): 2200 (C=N), 1680 cm⁻¹ (C=O). ¹H NMR spectrum (100 MHz, DMSO-D₆): 7.46 (1 H, d, *J* = 9 Hz, 8-H), 7.71 (1 H, dd, *J*₂₁ = 9, *J*₂₄ = 3 Hz, 2-H), 8.02 (1 H, d, *J* = 3 Hz, 4-H), 8.30 (1 H, dd, *J*₉₈ = 9, *J*₉₁₁ = 2.5 Hz, 9-H), 8.82 (1 H, d, *J* = 2.5 Hz, 11-H), 9.11 ppm (1 H, d, *J* = 9 Hz, 4-H). Found, %: Cl 9.7, N 15.4. Calc. for C₁₇H₇ClN₄O₄, %: Cl 9.7, N 15.3.

This work was sponsored by grant APU 063016 of the International Sorosovskii program for the development of the exact sciences in the Ukraine.

REFERENCE

1. V. M. Kisel', V. A. Kovtunencko, A. V. Turov, A. K. Tytilin, and F. S. Babichev, Dokl. Akad. Nauk SSSR., **306**, No. 3, 628 (1989).

Taras Shevchenko Kiev University, Kiev 252033. Translated from Khimiya Geterotsiklicheskih Soedinenii, No. 8, pp. 1139-1140, August, 1997. Original article submitted April 20, 1997.