SYNTHESIS OF 7-ARYL-1,2,3,4-TETRAHYDROPYRIDAZINO[4,3-c]PYRIDAZIN-3-ONES

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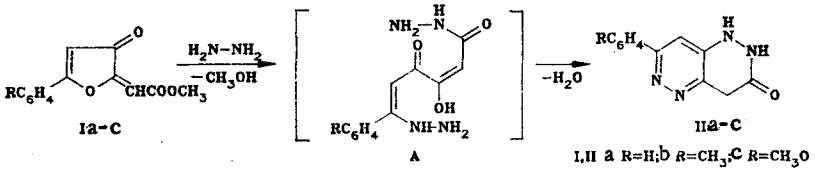
It is known that 2-arylidene-4-ethoxycarbonyl-5-methyl-2,3-dihydro-3-furanones react with hydrazine to give 3-arylacetyl-4-ethoxycarbonyl-5-methylpyrazoles [1]. In an investigation of the reaction of 2-methoxycarbonylmethylene-5-aryl-2,3-dihydro-3-furanones Ia-c [2] with a 70% aqueous solution of hydrazine in ethanol we unexpectedly obtained 7-aryl-1,2,3,4-tetrahydropyridazino[4,3-c]-pyrdazin-3-ones IIa-c in 81-89% yields.



Compounds IIa-c are evidently formed as a result of nucleophilic attack by hydrazine at the electrophilic center at the carbon atom in the 5 position of the 3-furanone ring, which is accompanied by opening of the latter with subsequent recyclization of the intermediately formed A.

Thus a 0.02-mole sample of a 70% aqueous solution of hydrazine was added to a solution of 0.01 mole of Ia-c in 150 ml of 96% ethanol, and the mixture was refluxed for 3 h. The solvent was evaporated, and the residue was recrystallized from 96% ethanol to give IIa-c.

Compound IIa, with mp 319-320°C (decomp.), was obtained in 89% yield. IR spectrum (thin layer): 3330 (amide NH), 3240 (amide NH), and 1635 cm^{-1} (C=O). PMR spectrum (d_6-DMSO): 3.47 (2H, s, CH_2), 6.60 (1H, s, CH), 7.65 (5H, m, C_6H_5), and 9.15 ppm (1H, broad s, NH).

Compound IIb, with mp 323-324°C (decomp.), was obtained in 81% yield.

Compound IIc, with mp 309-310°C (decomp.), was obtained in 86% yield.

LITERATURE CITED

1. B. Chantegrel, D. Hartmann, and S. Gelin, Tetrahedron, 33, 45 (1977).
2. Yu. S. Andreichikov and V. O. Koz'minykh, USSR Inventor's Certificate No. 1077891; Byull. Izobret., No. 9, 60 (1984).

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