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SYNTHESIS OF 3-CHLORO-6,6-DIPHENYL-6,11-DIHYDROPYRIDO[1',2':1,2]IMIDAZO-[4,5-*b*]QUINOLINE BASED ON REACTION OF 2-CHLOROMETHYL-4,4-DIPHENYL-4H-3,1-BENZOXAZINE WITH 2-AMINO-5-CHLOROPYRIDINE

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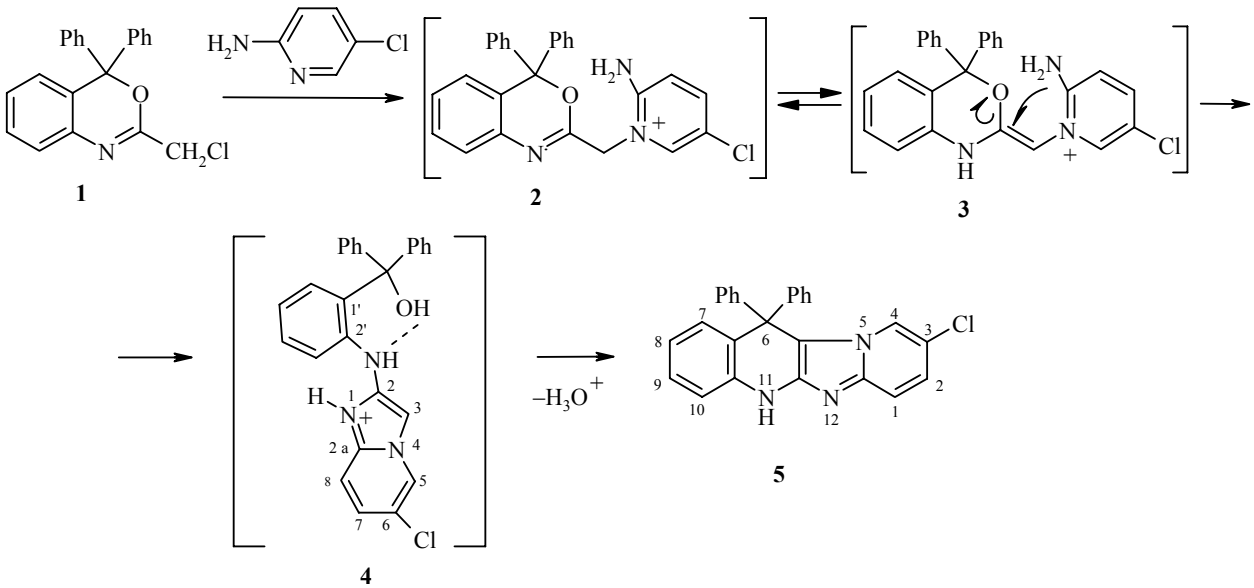
In an extension of research on synthesis and study of the properties of substituted 4H-3,1-benzoxazines [1], we have carried out reactions of 2-chloromethyl-4,4-diphenyl-4H-3,1-benzoxazine (**1**) with a number of nucleophiles.

We found that reaction of benzoxazine **1** with 2-amino-5-chloropyridine (boiling the starting materials in absolute alcohol in the presence of K_2CO_3 [2]) occurs in an unusual manner and leads to formation of a novel heterocyclic system. We have established that both nitrogen atoms of the reagent enter into the reaction. We hypothesize that alkylation of the pyridine nitrogen atom occurs first. After this, a 1,3-prototropic shift occurs in the initial alkylation product **2**, leading to intermediate **3**, and then opening of the oxazine ring at the $C_{(2)}$–O



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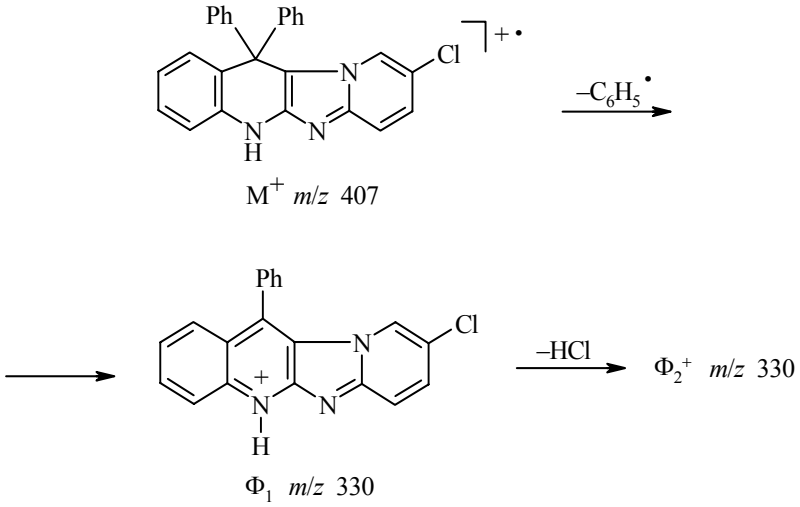
bond leads to formation of an imidazo[1,2-*a*]pyridine system **4**. Then as a result of intramolecular electrophilic substitution of the proton at $C_{(3)}$ of the imidazole ring, closure of the dihydropyridine ring occurs and the tetracyclic structure **5** is formed.

3-Chloro-6,6-diphenyl-6,11-dihydropyrido[1',2':1,2]imidazo[4,5-*b*]quinoline (5). Yield 50%; mp >235°C (alcohol). IR spectrum (vaseline oil), ν, cm^{-1}: 3300 (NH), 1580 (C=C), 1540 (C=N). ^1H NMR spectrum (Bruker WM-350, SF = 250 MHz, DMSO), δ, ppm (*J*, Hz): 6.75 (1H, m, H-10); 6.90 (1H, d, $J_{1\text{-}2}$ = 5.0, H-1); 7.25 (15H, m, $13H_{arom}+H_2+H_4$); 9.60 (1H, s, NH). Mass spectrum (Varian CH-6), *m*/*z* (I_{rel}, %)*: 407 (10); 332 (35); 330 (100); 294 (13); 203 (3); 163 (7); 147 (3); 135 (6); 91 (3); 83 (5); 78 (6). Found, %: C 76.35; H 4.85; Cl 10.55; N 8.42; *m*/*z* 407 $[M]^+$*. $C_{26}H_{18}ClN_3$. Calculated, %: C 76.56; H 4.42; Cl 10.31; N 8.71.

Initial decomposition of compound **5** is characterized by abstraction of a phenyl radical from the molecular ion and then elimination of an HCl molecule.



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* The values of *m*/*z* for the ions were calculated based on the ^{35}Cl isotope.