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# LETTERS TO THE EDITOR

## SYNTHESIS OF THE NOVEL HETEROCYCLIC SYSTEM 3-PHENYL-3,4-DIHYDROBENZIMIDAZO[2,1-*f*][1,2,4]TRIAZINE

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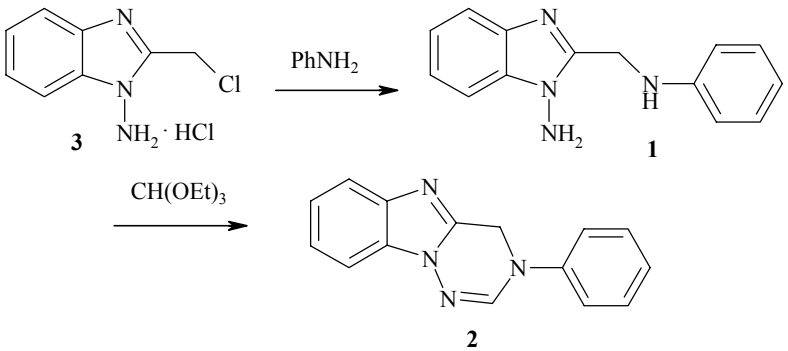
**Keywords:** 2-phenylaminomethylbenzimidazol-1-ylamine, 3-phenyl-3,4-dihydrobenzimidazo[2,1-*f*]-[1,2,4]triazine, 2-chloromethylbenzimidazol-1-ylamine, condensation.

In continuing studies on benzimidazole [1] and its condensed heterocycles [2], by condensation of 1-amino-2-(phenylaminomethyl)benzimidazole (**1**) with the ethyl ester of orthoformic acid we obtained 3-phenyl-3,4-dihydrobenzimidazo[2,1-*f*][1,2,4]triazine (**2**): a representative of a previously unknown heterocyclic system. In the IR spectrum of triazine **2**, there were no bands from amino groups, while in the $^1$H NMR spectrum we observed a signal from a methine proton at 8.01 ppm. Compound **1** was obtained in good yield by reaction of (2-chloromethylbenzimidazol-1-yl)amine hydrochloride (**3**) with aniline. Synthesis of compound **3** from (1-aminobenzimidazolyl-2-yl)methanol [3] will be described in a separate paper.




**3** **1** **2**

The IR spectra were obtained on an FT-IR Spectrum BX II spectrophotometer (Perkin-Elmer) in nujol, and the $^1$H NMR spectra were obtained on a Tesla BS-587A (80 MHz) in DMSO-$d_6$, internal standard TMS.

**1-Amino-2-phenylaminomethylbenzimidazole (1).** A solution of (2-chloromethylbenzimidazol-1-yl)-amine hydrochloride (0.2 g, 0.092 mmol) and aniline (0.26 g, 0.28 mmol) in ethanol (30 ml) was boiled for 2 h, concentrated under vacuum, and the residue was dissolved in $CHCl_3$. The solution obtained was washed with water, dried, and concentrated under vacuum. The precipitated crystalline product was filtered out and

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recrystallized from toluene, and we obtained 0.19 g (88%) of compound **1**; mp 182-183°C. IR spectrum, ν, $cm^{-1}$: 3378, 3290 ($NH_2$), 3153 (NH). $^1H$ NMR spectrum, δ, ppm (*J*, Hz): 4.58 (2H, d, *J* = 4, $CH_2$); 6.05 (3H, s, $NH_2$, NH); 6.44-7.70 (9H, m, ArH). Found, %: C 70.80; H 6.14; N 23.82. $C_{14}H_{14}N_5$. Calculated, %: C 70.57; H 5.92; N 23.51.

**3-Phenyl-3,4-dihydrobenzo[4,5]imidazo[2,1-*f*][1,2,4]triazine (2).** A mixture of compound **1** (0.15 g, 0.63 mmol) and ethyl ester of orthoformic acid (2 ml) was heated for 8 h at a temperature of 100°C. A drop of conc. $H_2SO_4$ was added to the cooled reaction mixture. The crystalline precipitate was filtered out, washed with ethanol, and recrystallized from DMF; we obtained 0.09 g (58%) of compound **2**; mp 245°C. $^1H$ NMR spectrum, δ, ppm: 5.28 (2H, s, $CH_2$); 7.10-7.74 (9H, m, ArH); 8.01 (1H, s, CH). Found, %: C 72.68; H 4.56; N 22.35. $C_{15}H_{12}N_4$. Calculated, %: C 72.56; H 4.87; N 22.57.

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