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SHORT COMMUNICATIONS

A Simple Synthesis of 2-(2-Chlorophenyl)benzimidazole from *o*-Phenylenediamine and 2-Chlorobenzaldehyde*

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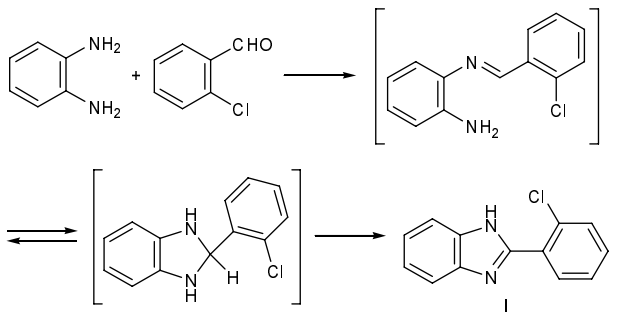
Benzimidazoles are well known as herbicides, fungicides, and both medicines and veterinary agents. One of the most convenient methods for the preparation of benzimidazoles is condensation of *o*-phenylenediamine with carboxylic acids [1]. Another way of synthesis of these compounds is reaction of *o*-phenylenediamine with benzaldehydes, followed by cyclization of intermediate Schiff base in the presence of various oxidants, such as nitrobenzene [1, 2], 2,3-dichloro-5,6-dicyano-1,4-benzoquinone (DDQ) [3], benzofuroxan [4], and MnO_2 [2]. The latter procedure requires the presence of an oxidant and correspondingly severe reaction conditions (high temperature, strongly acidic medium [1], or microwave irradiation [5]).



I

We have found that 2-(2-chlorophenyl)-1*H*-benzimidazole (**I**) can be synthesized in a moderate yield in the absence of an oxidant under mild conditions by direct condensation of *o*-phenylenediamine with 2-chlorobenzaldehyde. The product was reliably identified by the ^{1}H NMR and mass spectra. The molecular structure of **I**, determined by X-ray analysis, was identical to that reported previously [6].

* The text was submitted by the authors in English.

2-(2-Chlorophenyl)-1*H*-benzimidazole (I). 2-Chlorobenzaldehyde, 2.25 ml (20 mmol), was added to a solution of 2.16 g (20 mmol) of *o*-phenylenediamine in 50 ml of acetonitrile. The mixture was heated for 1.5 h under reflux and cooled to room temperature, and the precipitate was filtered off and washed with acetonitrile (2×1 ml). Yield 1.30 g (28%), mp 228°C [6]. IR spectrum, ν, cm^{-1}: 3400 (NH), 1624 (C=N). ^{1}H NMR spectrum, δ, ppm: 5.43 s (1H), 7.1–8.0 m (8H). Mass spectrum, *m*/*z*: 228 $[M]^+$, 193 $[M - Cl]^+$.

The IR spectrum was recorded in KBr on a Nicolet 20SXR instrument. The ^{1}H NMR spectrum was obtained on a Varian Unity spectrometer (300 MHz) in $CDCl_3$. The mass spectrum (fast atom bombardment) was recorded on a JEOL SX-102 mass spectrometer.

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