

Synthesis of (2-Chloropyridine-3-yl)-(4-nitrobenzylidene) amine and its antibacterial activity

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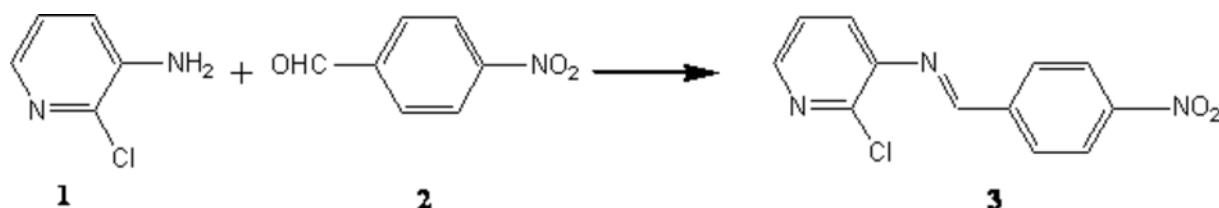
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Received: 24 October 2003 / Accepted: 11 February 2004 / Published: 24 February 2004

Keywords : Schiff base, 3-amino-2-chloropyridine, *p*-nitrobenzaldehyde, biological activity, ab initio

Schiff bases are reported to show a variety of biological activities such as antibacterial [1-3], antifungal [4-5], anticancer [6-7] and herbicidal [8] activities. Pyridinium compounds have biological activities [9] such as antifungal [10] and antibacterial [10-11] activities. The presence of a chloro moiety in different types of compounds causes them to exhibit pesticidal activity⁸. Based on these facts, we synthesized 2-chloro pyridin-3-yl-(4-nitrobenzylidene) amine **3**. According to ab initio calculations at the HF/6-31G (d,p) level, Schiff base **3** at dihedral angle of 42.9° is about 15.70 kJ/mol more stable than the coplanar pyridine and nitrophenyl rings (Figure 1). The titled compound was tested against *S. aureus*, *B. subtilis*, *K. pneumonia* and *P. aeruginosa* by the disk diffusion method and was not active at the level of 200 µg/disk.



A mixture of 3-amino-2-chloropyridine **1** (1.28 g, 10.00 mmol), 4-nitrobenzaldehyde **2** (1.51 g, 10.00 mmol) and anhydrous magnesium sulfate (4.00 g) in dry dichloromethane (40.00 mL) was stirred at room temperature for four hours. The suspension was filtered and washed with dichloromethane. The solvent was evaporated under reduced pressure and Schiff base **3** was formed as a yellow solid which was recrystallized from warm ethanol (2.23 g, 85%).

m.p. 146-148 °C.

IR (KBr) (cm⁻¹): 1340.40 and 1517.90 (NO₂), 1600.0 (N=CH), 1633.60 (C=N pyridine ring).

¹H-NMR (CDCl₃) (250 MHz) δ(ppm): 7.23-8.38 (m, 7 H, Ar-H), 8.54 (s, 1H, CH=N).

^{13}C - NMR (CDCl_3) (62.90 MHz) δ (ppm): 123.65-147.18 (2 ph), 161.41 (CH=N).

MS (m/z, %): 261 (M^+ , 64.90), 149 ($\text{NO}_2\text{Ph-C=N}$, 36.00), 126($\text{C}_5\text{H}_3\text{NCIN}$, 15.00), 112 ($\text{C}_5\text{H}_3\text{NCl}$, 34.00), 92($\text{C}_5\text{H}_3\text{N}_2$, 29.00), 77 ($\text{C}_5\text{H}_3\text{N}$, 31.20), 53 (N=CH-CH=CH , 35.00), 51 (N=C-C=CH , 100.00).

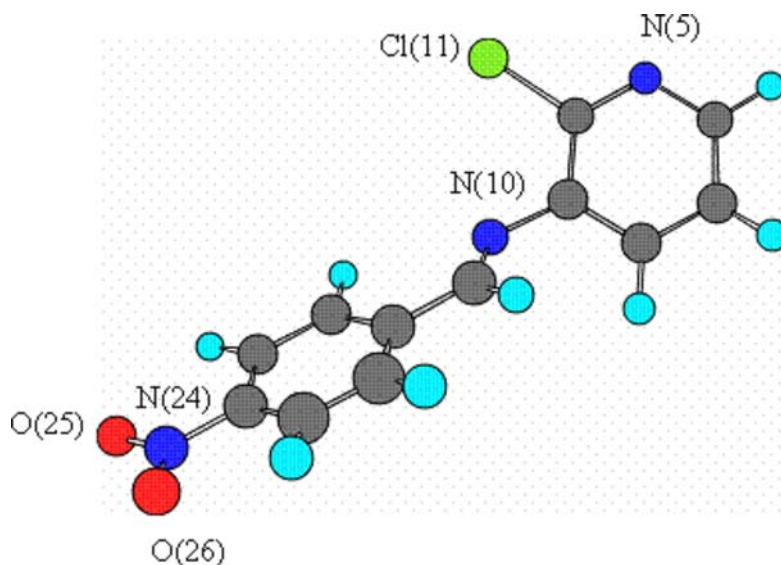


Figure 1 : The minimum energy conformation of Schiff base 3

Acknowledgment

The authors thank the Shiraz University Research Council for financial support (Grant No. 81-SC-1495-C191).

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Sample Availability : Available from MDPI.

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