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Synthesis of 2-(2-napthylthio)-quinoline-3-carboxaldehyde as a novel complexing agent

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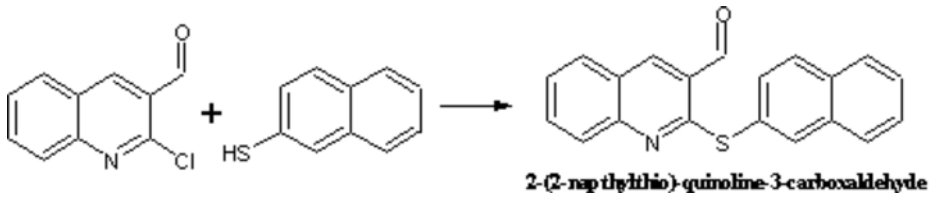
Abstract:
In this paper we propose the synthesis of 2-(2-napthylthio)-quinoline-3-carboxaldehyde. In addition to its synthesis we present elemental, IR, and NMR spectral analysis to characterize the molecule.

Introduction

In the last decade, much attention has been given to the organic ligands and transition metal complexes because of their biological relevance, interesting spectral and magnetic properties. The fused aromatic heterocyclic ligands and their metal complexes are being used extensively as pharmaceutical and chemotherapeutic agents [1-4]. On the other hand, quinoline and their derivatives form an interesting class of compounds which display attractive applications as pharmaceuticals [5-8] and are general synthetic building blocks, due to their chemical and biological relevance. Therefore, it was thought worthwhile to isolate and characterize some novel quinoline derivatives containing different donor atoms.

Synthesis of 2-(2-napthylthio)-quinoline-3-carboxaldehyde

Into a mixture of 2-Chloroquinoline-3-carboxaldehyde (0.958 g, 5 mmol), 2-naphthalenethiol (0.8 g, 5 mmol) and potassium carbonate (1.38 g, 10 mmol), anhydrous dimethylformamide (50 ml) was added. The mixture was heated at 80-90 ^{o}C for 2 h with constant stirring and was then cooled to room temperature. The product was separated on an alumina column (3x20 cm) using methylene chloride/acetonitrile (5:1) as eluant.



2-(2-napthylthio)-quinoline-3-carboxaldehyde

Melting point: 156-160 ^{o}C

Elemental Analysis: Calculated for $C_{20}H_{13}NOS$ (315.38): C 76.16, H 4.15, N 4.44; found C 76.35, H 4.32, N 4.63.

IR (KBr, cm^{-1}): 760 (-CSC-), 1710 (aldehyde, CHO), 1570 (C=C), 1650 (C=N), 2950 (C-H, aromatic).

^{1}H-NMR (250 MHz, DMSO-d_6): δ= 9.6 (s, 1H, -CHO), 7.4-8.6 (m, 11H, Ar-H).

^{13}C-NMR (62.9 MHz,$CDCl_3$): 128.9; 127; 130; 131; 149; 130; 141; 159; 147; 170; 125; 123; 125; 135; 126; 134; 129; 127; 128; 129.

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