

Synthesis and characterization of a new 4 – aminoantipyrene based schiff base ligand and its cobalt complex

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Abstract

A new 4-(2,5-dimethoxybenzylideneamino)-1,2-dihydro-2,3-dimethyl-1-phenylpyrazol-5-one Schiff base ligand was synthesized by condensation of 4 – aminoantipyrene and 2,5 – dimethoxy benzaldehyde in 1:1 ratio. After that its cobalt (II) complex was prepared. Then their melting point and FT-IR spectra were recorded.

Keywords: Schiff base, FTIR, antimicrobial, metal complex.

1. Introduction

In recent years, Schiff base complexes of transition metals are giving an attention and interest to inorganic chemists due to their wide range of diverse biological activities with chemical, structural and spectral properties [1 - 2]. The metal-based drugs have gained much importance in medicinal field for the treatment of diabetes, cancer, anti-inflammatory and cardiovascular disease [3 - 5]. The Schiff bases are widely employed as ligand in complex formation. Schiff base metal complexes are considered as simple and suitable candidate for catalytic application [6 – 8]. Schiff bases are also used as optical and electro sensors, as well as in various chromatographic methods, to enhance selectivity and sensitivity [9 - 11]. Numerous Schiff based chemo sensors are reported for metal ions such as Hg²⁺ [12], Zn²⁺ [13], Ca²⁺ [14] and Pb²⁺ [15]. Also in many reports most of them showed fluorescence quenching due to the paramagnetic nature of Fe³⁺ [16, 17].

The Schiff base derived from 4-aminoantipyrene and its complexes shows various types of applications such as catalysis [18, 19], clinical applications [20], pharmacology [21] and also possess numerous biological applications that include antifungal, antibacterial, analgesic, antipyretic and anti-inflammatory [22 - 24].

The cobalt based Schiff base complexes have attracted significantly scientist towards themselves due to their numerous applications like antibacterial [25] antifungal [26] antiviral [27] antiproliferative [28] and anticancer activity [29]. Also in several reactions these can be utilized as catalysts for instance electrochemical reactions [30], cross-coupling reactions [31], polymerization [32], hydrogenation [33], Lewis acid catalysts in organic synthesis [34]. Thus we have synthesized a new Schiff base ligand and its cobalt complex in this work.