

Synthesis, characterization and catalytic activities of Copper(II) and Nickel(II) complexes of Schiff base derived from Salicylaldehyde and Anthranilic acid

S.A.D. Chathurangi, M. Sithambaresan*, & S. Premkumar

Department of Chemistry, Eastern University, Sri Lanka

**Corresponding author: sithambaresanm@esn.ac.lk*

Abstract

Schiff bases are imines that are resulted from condensation aldehyde or ketones with primary amines and their derivatives, which are considered important ligands in the development of coordination chemistry. Schiff bases and their metal complexes have various applications in many fields including industrial, analytical, and biological fields. They are also biologically active compounds bearing different biological properties such as antioxidant, anti-inflammatory, anti-cancer, anthelmintic, anticonvulsant, antimicrobial, and antitubercular activities. The present study was aimed at the synthesis and characterization of a Schiff base from salicylaldehyde and anthranilic acid and its Cu(II) and Ni(II) metal complexes and evaluating the catalytic activities. 2-((Z)-[(2-hydroxyphenyl)methylidene]amino)benzoic acid Schiff base ligand and its Cu(II) and Ni(II) complexes were synthesized with metal-ligand ratios 1:1 and 1:2. They were partially characterized using UV-Visible and IR spectroscopy. The spectroscopic analysis revealed that two of the complexes (Cu(II) and Ni(II)) with metal-ligand ratio 1:1 show four-coordinate geometry while the other two complexes (Cu(II) and Ni(II)) with metal-ligand ratio 1:2 exhibit six-coordinate geometry. The conductivity measurements of the ligand and the metal complexes confirmed their non-electrolytic nature in the solution. The catalytic activities of the synthesized compounds were measured using the kinetic study of the decomposition of H₂O₂. All the metal complexes and ligands showed greater catalytic activities than the negative control. Of those four metal complexes, Cu (II) complexes showed higher catalytic activity than that of Ni(II) complexes.

Keywords: *Anthranilic acid, Catalytic activity, H₂O₂ decomposition, Salicylaldehyde, Schiff bases*