

Synthesis, Characterization and Catecholase Study of Novel Bidentate Schiff Base Derived from Dehydroacetic Acid

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Abstract : Novel Schiff base ligand HL has been synthesized by condensation of aromatic amine and DHA. It was characterized by UV-Vis, FT-IR, SM, NMR (1H, 13C) and also by single-crystal X-ray diffraction. The crystal structure shows that compound crystallized in a triclinic system in P-1 space group and with a two unit per cell ($Z = 2$). The asymmetric unit, contains one independent molecules, the conformation is determined by an intermolecular N-H...O hydrogen bond with an S(6) ring motif. The molecule have an (E) conformation about the C=N bond. The dihedral angles between the phenyl and pyran ring planes is 89.37 (1), the two plans are approximately perpendicular. The catecholase activity of its situ copper complexes of this ligand has been investigated against catechol. The progress of the oxidation reactions was closely monitored over time following the strong peak of catechol using UV-Vis. Oxidation rates were determined from the initial slope of absorbance. time plots, then analyzed by Michaelis-Menten equations. Catechol oxidation reactions were realized using different concentrations of copper acetate and ligand (L/Cu: 1/1, 1/2, 2/1). The results show that all complexes were able to catalyze the oxidation of catechol. Acetate complexes have the highest activity. Catalysis is a branch of chemical kinetics that, more generally, studies the influence of all physical or chemical factors determining reaction rates. It solves a lot of problems in the chemistry reaction process, especially for a green, economic and less polluting chemistry. For this reason, the search for new catalysts for known organic reactions, occupies a very advanced place in the themes proposed by the chemists.

Keywords : dehydroacetic acid, catechol, copper, catecholase activity, x-ray

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