

Synthesis and characterization of Copper(II) and Cadmium(II) Complexes of hydroxamate derivatives

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Hydroxamic acids are N-hydroxy amides, which are derivatives of hydroxylamine and carboxylic acids. Hydroxamic acids are naturally occurring or synthetic weak organic acids. They contain the oxime ($-N-OH$) and the carbonyl ($C=O$) groups. Two possible hydroxamic acid tautomers exist, one (the keto isomer) is predominant under acidic conditions, and the other enol form is stable in alkaline conditions. The presence of (E) and (Z) isomers of hydroxamic acid anions extend the structural diversity. Hydroxamic acids are powerful metal ion chelating agents. Hydroxamic acids are an important class of bioactive compounds with wide uses as anti-bacterial or anti-inflammatory agents and a key component of many natural products, mainly siderophores in lower organisms. It is used as inhibitors of hypertension, tumor growth, inflammation, infectious agents, asthma, arthritis, Alzheimer's diseases and more.

In this study, Copper (II) (SRC1 and SRC3) and Cadmium (II) (SRC2 and SRC4) complexes were synthesized from potassium hydroxamate derivative ligands and they were characterized by FTIR and Electronic spectra as well as by melting points and conductivity measurements. The electronic spectral study and the melting point analyses revealed that the ligands were coordinated to the metal centre. FTIR and conductivity analyses confirm the coordination of hydroxamate ions as O, O-bidentate mode (via the hydroxyl oxygen and the carbonyl oxygen atoms of the ligands) to the metal centre. Based on the experimental evidence a possible structure is also proposed.