

Synthesis, spectral and DNA/Protein binding evaluation of novel Cu(II) chelates of an NNO donor tridentate aroylhydrozone: Halogen bonding directed close packing

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Abstract

An NNO donor aroylhydrazone monohydrate, HFPB·H₂O (3-fluoropyridine-2-carbaldehyde benzoylhydrazone monohydrate) was synthesised from 3-fluoropyridine-2-carbaldehyde and benzhydrazide and physicochemically characterised. The coordination behaviour of the aroylhydrazone with the metal ion is investigated through various physicochemical techniques and it is concluded that it binds to the metal ion predominantly in the enolate resonance form, while few complexes exhibit keto form of the ligand. The structure of [Cu(FPB)(OAc)(H₂O)]·H₂O (**4a**) established by single-crystal X-ray diffraction method unveiled that the metal ion has a distorted square-pyramidal geometry in this complex. The coordination sites of Cu(II) ion are occupied by azomethine N, pyridyl N and iminolate O from a monodeprotonated hydrazone moiety and the remaining two positions are occupied by two oxygen atoms, one each from acetate ion and the water molecule. Potential applications of the complexes were studied by subjecting them to DNA/protein (BSA) binding studies using electronic and fluorescence spectroscopy. The complexes were

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