Cu(II) complexes of Schiff base and reduced Schiff base ligands: Influence of weakly ligating sulfonate group on structure and catecholase activity

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Reduced Schiff base ligands, *N*-(2-hydroxybenzyl)-amino acids with ONO donor groups are characterized by their binucleating ability through phenolato bridging. Further, the reduced Schiff base ligands can afford more flexibility in the backbone due to the reduction of C=N bond present in the corresponding Schiff bases. In addition, they have potential hydrogen bond donor acceptor functionalities. Dicopper(II) complexes have been explored as model compounds for the metalloenzymes with oxidase activity in the field of bioinorganic chemistry and hence understanding the chemistry of binucleating ligands with different coordination environments and their complexes as models for type III protein is of current interest. In this connection we have recently reported a series of dicopper(II) complexes of reduced Schiff base ligands and their functional relationship with catecholase activity. Apart from the reduced Schiff base ligands with carboxylate donor group, their sulfonic acid analogues are expected not only to improve the solubility in the aqueous media but also form interesting supramolecular architectures by affecting the connectivity at the metal centers as well as the hydrogen bonding pattern.

Five dinuclear complexes, of the Schiff base ligands H_2Sams and H_2Saes and the reduced Schiff base ligands H_2Sam and H_2Sae, $[Cu_2(Sams)_2(H_2O)_2]$, **1;** $[Cu_2(Sam)_2(H_2O)_2].H_2O$, **2;** $[Cu_2(Saes)_2(H_2O)_2].2H_2O$, **3;** $[Cu_2(Sae)_2].2H_2O$, **4;** and $[Cu_2(Sae)_2(DMF)_2].2DMF$, **5**, have been synthesized in moderate yield and the solid state structures of **1**, **3**, **4** and **5** have been determined by X-ray crystallography showing that the Cu(II) centers have square-pyramidal geometry. Of these **4** has 2D coordination polymeric (4, 4) network structure. All these complexes have been investigated for their Catecholase activity by employing 3,5-DTBC as a model substrate. The activity measurements have been compared with dicopper(II) complexes of similar ligands having carboxylate groups in order to understand the influence of weakly coordinating sulfonate group both on structures and the activity. The details will be discussed in the talk.