Abstract

Copper(II) complexes of two non-steroidal anti-inflammatory drugs (NSAIDs) naproxen (nap) and salicylate (sal)) with nitrogen donor ligands pyrazole (pz) and metronidazole (mtnd), $[Cu(sal)_2(pz)_2]$ (**1**), $[Cu(nap)_2(pz)_4]$ (**2**), $[Cu_2(nap)_4(mtnd)_2]$ (**3**) have been synthesized and spectroscopically characterized. The crystal structure of complex (**1**) and (**2**) has been determined by X-ray crystallography. In complex **1** the Cu(II) ion is coordinated with two nitrogen of pyrazoles and two oxygens of the salicylate carboxylate groups in copper atom plan and with the other two oxygen atoms of the carboxylate groups at longer distances in the axial sites to yield *trans*-$CuN_2O_2 + O_2$ chromophore. In complex **2** Cu(II) ion is coordinated in the plan with four nitrogen of pyrazoles and the axial sites are occupied by two oxygen of the naproxenato carboxylate groups to yield $CuN_4+ O_2$ chromophore. The catalytic oxidase activities of complexes toward the aerobic oxidations of 3,5-di-tert-butylcatechol (3,5-DTBC) to 3,5-di-tert-butyl-*o*-benzoquinone (3,5-DTBQ), *o*-phenylenediamine (OPD) to 2,3-diaminophenazine (DAP), and *o*-aminophenol (OAP) to 2-amino-3H-phenoxazine-3-one (APX) have been studied. Solvents-dependent catecholase activity of these complexes solvents: methanol (MeOH), dichloromethane (DCM), and acetonitrile (ACN) also have been studied. The catalytic activities of these complexes mimic those of copper-containing enzymes catecholase and phenoxazinone synthase.