Title:	Catalytic Fate of Two Copper Complexes towards Phenoxazinone Synthase and Catechol Dioxygenase
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Abstract:	In this present work, we report the synthesis and structural characterization of two copper(II) complexes, [Cu(bpy)Cl2] (1) & [Cu(μ-Cl)(phen)Cl]2 (2) [bpy=2,2′-bipyridine; phen=1,10-phenanthroline]. We have also studied their catalytic fate towards phenoxazinone synthase and catechol dioxygenase activity. X-ray structural analyses revealed that 1 & 2 crystallize in triclinic & monoclinic system with P 1 and Cc space group respectively. The copper complexes catalyse the oxidative coupling of 2-amino phenol (2-AP) to aminophenoxazin-3-one with significant turn over number, kcat(h−1)=2.08×103 & 2.16×103 for 1 & 2 resectively. During investigation of catechol dioxygenase activity, stoichiometric addition of 1 & 2 to 3,5-di-tert-butylcatechol (DTBC) in acetonitrile produce in situ catecholate-to-Cu(II) absorption bands at 812 and 821 nm respectively. The in situ Cu(II)-catecholate species for both 1 & 2 react with molecular oxygen at the rate, kobs: 7.95×10−4 and 1.30×10−3 min−1 respectively and produce intradiol cleavage products in exclusive amount. Minor amount of benzoquinone is also found in solution. Intradiol products are found as major product in solution and accounts in favour of substrate activation mechanism.
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