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Antioxidant activity of copper(II) complexes with salicylaldehyde derivatives and α-diimines

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In this work are presented the antioxidant activities of four copper(II) complexes. Our complexes contain a combination of two types of ligands – salicylaldehyde derivatives (methyl 3-formyl-4-hydroxybenzoate (H**L1**) or 4-(diethylamino)salicylaldehyde (H**L2**)) and α-diimines (bipyridine (bipy) or phenanthroline (phen)). Complex **1** is a dinuclear Cu^{2+} complex containing **L1** and bipy ligands, complex **2** is dinuclear and contains **L1** and phen ligands, complex **3** is a mononuclear Cu^{2+} complex containing **L2** and bipy ligands, whereas complex **4** is dinuclear and contains **L2** and phen ligands. Based on IC_{50} values, it was established that complex **4** exhibits an excellent antioxidant activity, which is at the same time the highest among all four complexes (Table 1). Complex **3** exhibits moderate activity, whereas complexes **1** and **2** show the lowest antioxidant activity. All four complexes have better antioxidant activity than starting compounds.

Table 1. Antioxidant activity of Cu(II) complexes and starting compounds

Compound	IC_{50} (mM)
2,2'-Bipyridine	/
1,10-Phenanthroline chloride monohydrate	15.630
Methyl 3-formyl-4-hydroxybenzoate	/
4-(Diethylamino)salicylaldehyde	54.642
$Cu(BF_4)_2 \cdot 6H_2O$	18.061
1	3.330
2	3.202
3	2.179
4	0.339
Ascorbic acid	0.079

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