

Bioactivity of carboxylatocopper(II) complexes

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Copper complexes containing N-donor ligands are traditionally studied from different points of view, e.g. for their anti-inflammatory and anticancer properties. Of particular interest is the potential property of copper(II) complexes mimicking enzymes like the superoxide dismutase (SOD) [1-3].

In the present work we focused on studying the structural, spectral, and potential biological properties of Cu(II) complexes with various derivatives of benzoic acid and with neutral N-donor ligand 4-pyridylmethanol. Their summary formula is $[\text{Cu}(\text{XCOO})_2(4\text{-PM})_2(\text{H}_2\text{O})_x]$, where XCOO^- presents derivatives of benzoic or fenamic acid; 4-PM = 4-pyridylmethanol and $x = 0$ or 1. The structures of the newly prepared complexes were determined by single-crystal X-ray analysis. The complexes were characterized by spectroscopic methods (IR, UV-vis and EPR spectroscopy) and their redox properties were determined by cyclic voltammetry. The interaction of Cu(II) complexes with calf-thymus DNA was monitored by diverse techniques (UV-vis spectroscopy, viscosity measurements) suggesting intercalation as the most possible mode of binding. Furthermore, their SOD and catechol oxidase mimetic activity were studied.

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