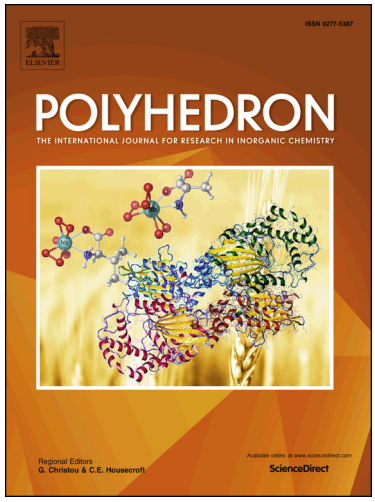

Superoxide dismutase activity studies of Mn(III)/Co(III)/Fe (III)complexes with Schiff base ligands

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Superoxide dismutase activity studies of Mn(III)/Co(III)/Fe (III)complexes with Schiff base ligands

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A b s t r a c t:

Mimetics of superoxide dismutases (SOD), with certain ability to eliminate superoxide radicals under aerobic conditions, would be promising as drug candidates for antioxidant therapy. Many efforts have been devoted to synthesize small molecular compounds to mimic the functionality of natural SOD. In this paper, the Mn(III)/Co(III)/Fe (III) complexes have been synthesized with the Schiff base ligand (NaH_2L), which was condensed from 2-hydroxynaphthalen-1- naphthaldehyde and 3,4-diaminobenzenesulfonic acid. The structures of complexes **1** and **3** have been determined by X-ray crystallographic method, and all the complexes have been investigated using FT-IR, MS. The binding constants between metal complexes and bovine serum albumin (BSA) have been determined by fluorescence spectroscopy. Meanwhile, we have synthesized 3 hybrid proteins through the interaction of the complexes and BSA. The SOD-like activity was tested by xanthine/xanthine oxidase method. The result shows that BSA molecule can increase the SOD activity of the transition metal complexes.

1. Introduction

Kinds of free radicals are formed in the course of biological metabolism, for instance, superoxide radicals ($O_2^{\bullet-}$), hydroxyl radicals (HO•), and ROO•, which are the representative of reactive oxygen species (ROS), the major source of which are from mitochondria [1, 2]. The superoxide radical ($O_2^{\bullet-}$) is generated through monoelectronic reduction of molecular oxygen and more easily created in the existence of exogenous components [3,4].

Excessive superoxide radical, which becomes a toxic reactive oxygen, causes cell damage through oxidation of cellular components, such as proteins, lipids, and nucleic acids [5,6], moreover, is associated to several pathologies like oxidative stress

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