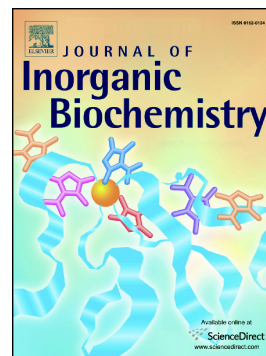


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Interaction of a chelating agent, 5-hydroxy-2-(hydroxymethyl)pyridin-4(1*H*)-one, with Al(III), Cu(II) and Zn(II) ions

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Abstract

5-Hydroxy-2-(hydroxymethyl)pyridin-4(1*H*)-one ligand, an iron chelator, was evaluated for its coordination ability toward Al(III), Cu(II) and Zn(II) ions by using potentiometric, NMR, EPR and UV-Vis techniques. The behavior of the ligand with the non-essential Al(III) ion has been examined, as well as its potential influence on the homeostatic equilibria of the essential Cu(II) and Zn(II) ions. Structural information on the complex formation equilibria have been obtained from 1D and 2D NMR study. The donor atoms involved in the coordination of Al(III), Cu(II) and Zn(II) ions are (O, O) the same as for Fe(III) at physiological pH value, even if from the complexation competition study the ligand appears to be more selective toward Fe(III) ions supporting that it can be used as an iron chelating agent. The involvement of N-donor atoms at high pH in Cu(II) coordination has been determined by using EPR and UV-Vis techniques.

Keywords: NMR, EPR, chelation therapy, Al(III), Cu(II), Zn(II)

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