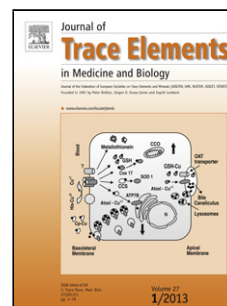


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Reviewer 1 Reviewer 2

Salicylamide derivatives for iron and aluminium sequestration. From synthesis to complexation studies.

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Abstract

This paper presents an easy, fast and economic synthesis of chelating agents for medical, environmental and analytical applications, and the evaluation of the stability of their complexes with Fe³⁺ and Al³⁺. Complex formation equilibria with Cu²⁺ and Zn²⁺ metal ions were also studied to evaluate if the chelating agents can perturb the homeostatic equilibria of these essential metal ions. Effective chelating agents for metal ions, in addition to their well-known medical uses, find an increasing number of applications in environmental remediation, agricultural applications (supplying essential elements in an easily available form), and in analytical chemistry as colorimetric reagents. Besides the stability of the complexes, the lack of toxicity and the low cost are the basic requisites of metal chelating agents. With these aims in mind, we utilized ethyl salicylate, a cheap molecule without toxic effects, and adopted a simple synthetic strategy to join two salicylate units through linear diamines of variable length. Actually, the mutual position of the metal binding oxygen groups, as well as the linker length, affected protonation and complex formation equilibria. A thorough study of the ligands is presented. In particular, the complex formation equilibria of the three ligands toward Fe³⁺, Al³⁺, Zn²⁺ and Cu²⁺ ions were investigated by combined potentiometric and spectrophotometric techniques. The results are encouraging: all the three ligands form stable complexes with all the investigated metal ions, involving the oxygen

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