Searching for new aluminium chelating agents: a family of hydroxypyrone ligands.

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Streszczenie

Attention is devoted to the role of chelating agents in the treatment of aluminium related diseases. In fact, in spite of the efforts that have drastically reduced the occurrence of aluminium dialysis diseases, they so far constitute a cause of great medical concern. The use of chelating agents for iron and aluminium in different clinical applications has found increasing attention in the last thirty years. With the aim of designing new chelators, we synthesized a series of kojic acid derivatives containing two kojic units joined by different linkers. A huge advantage of these molecules is that they are cheap and easy to produce. Previous works on complex formation equilibria of a first group of these ligands with iron and aluminium highlighted extremely good pMe values and gave evidence of the ability to scavenge iron from inside cells. On these bases a second set of bis-kojic ligands, whose linkers between the kojic chelating moieties are differentiated both in terms of type and size, has been designed, synthesized and characterized. The aluminium(III) complex formation equilibria studied by potentiometry, electrospray ionization mass spectroscopy (ESI-MS), quantum-mechanical calculations and (1)H NMR spectroscopy are here described and discussed, and the structural characterization of one of these new ligands is presented. The in vivo studies show that these new bis-kojic derivatives induce faster clearance from main organs as compared with the monomeric analog.

Słowa kluczowe

Aluminium related diseases, Chelation therapy, Hydroxypyrones, Kojic acid, Solution equilibria

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