A new 3-hydroxy-4-pyridinones: iron and aluminium sequestration and *in vivo* studies.

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Elevated levels of iron and aluminium in the body can lead to tissue damage, organ failure and eventually death. To reduce complications of metal overload, specific chelating agents have been used.

Following our recent developments in a series of hexadentate 3-hydroxy-4-pyridinones (3,4-HP) with high M^{3+} sequestering capacity, we herein present a novel tripodal homologue. The length of the linker aimed to reduce the ligand molecular weight and concomitant improvement in the membrane crossing ability and accessibility to cytoplasmic iron pools, but still retaining the capacity for the formation of a 1 : 1 (M^{3+} : L) complex with high thermodynamic stability and kinetic inertness. Besides the synthesis of the new ligand, solution studies have been performed to evaluate the acid–base properties and complexation capacity towards Fe^{3+} and Al^{3+} using potentiometry and a number of spectrometric techniques. The measured pFe and pAl values represent an improvement as compared to the marketed drug deferiprone. The new chelator possessing high pM^{3+} values shows promising ability to remove Fe and Al under in vivo conditions.