

AGHLDDLPGALSAL : a hemoglobin fragment potentially competing with albumin to bind transition metal ions.

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Protein degradation leads to the formation of endogenous peptides, the biological activity of which is most often unknown. The peptide AGHLDDLPGALSAL, recently isolated from mouse brain homogenates, has been recognized as a fragment of the α -chain of hemoglobin. AGHLDDLPGALSAL has the ability of inhibiting the peripheral hyperalgesic inflammatory responses through the indirect activation of the μ -opioid receptors. A peculiarity of AGHLDDLPGALSAL is the presence, at its N-terminus of a strong binding site for divalent transition metal ions, similar to that characterizing the human albumin and called "ATCUN motif". The consequential metal binding ability of AGHLDDLPGALSAL can be connected to its biological activity. For this reason, we decided to investigate the coordination properties of AGHLDDLPGALSAL towards Cu(II), Ni(II) and Zn(II) ions, reported here for the first time. The results confirm that AGHLDDLPGALSAL is a strong ligand for those metals: it can even compete with albumin under suitable conditions. In vitro assays on the inhibition of Cu(II) toxicity towards different cell lines confirmed that the binding ability of AGHLDDLPGALSAL can imply relevant biological consequences.

Słowa kluczowe

AGHLDDLPGALSAL, Complex-formation equilibria, Cytotoxicity of copper, Endogenous peptides, metal complexes

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