

The structural aspects of the copper(II) binding by the His-analogue of somatostatin.

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Streszczenie

In this paper we report on the coordination abilities of the somatostatin analogue towards copper(II) ions. The investigated peptide belongs to the group of peptide hormones having a cyclic structure formed by a disulfide bridge. In the case of somatostatin, the disulfide bridge is formed between Cys¹ and Cys¹⁴. The studied analogue is characterized by the replacement of both Cys residues by His residues. Potentiometric and spectroscopic studies allow us to characterize the coordination abilities of the ligand. The studied peptide is much more effective in metal ion binding in comparison with simple peptides with an XaaXaaHis motif. The structure of the complex, obtained using theoretical calculations, allows us to explain the high efficiency in metal ion binding of the investigated peptide. In both investigated complexes the Cu(II) ion is bound by two amide nitrogen atoms, an amino group atom and a nitrogen of a third imidazole ring in a square planar position. The metal ion is located in close proximity to aromatic amino acid residues, which can influence the stability of the considered binding mode.

Słowa kluczowe

Somatostatin, copper, histidine, Complex

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