# Specific interactions of the β-carboxylate group of the aspartic acid residue in oligopeptides containing one, two or three such residues with copper(II) ions. A potentiomeric and spectroscopic study.

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Streszczenie

Results are reported of a study of the influence of Asp and Glu residues in a peptide chain on the ability of the peptide to co-ordinate to copper(II) ions. The tetrapeptides Asp-Ala-Ala-Ala, Ala-Asp-Ala-Ala, Ala-Ala-Ala-Asp, Asp-Ala-Ala-Asp, Ala-Asp-Asp-Ala, Ala-Asp-Ala-Asp, Ala-Ala-Asp-Asp, Glu-Ala-Ala-Ala, Ala-Glu-Ala-Ala and Ala-Ala-Glu-Ala and the tripeptide Asp-Asp-Asp have been synthesised and their complexes with $H^+$ and $Cu^{2+}$ ions studied using potentiometry and spectroscopy (visible, CD and ESR). Results show that while the Glu residue has little influence on co-ordination equilibria, an N-terminal Asp residue stabilizes significantly the copper(II) complex with only one nitrogen atom co-ordinated (1N) as a result of chelation through the β-carboxylate group rather than the peptide CO oxygen. This stabilization is much greater than with aspartic acid itself. Aspartic acid residues in the second or third positions of the peptide sequence stabilize 2N and 3N complexed species respectively, delaying significantly and, in some cases preventing completely, formation of 4N complexes. An Asp residue in the fourth position has a much smaller effect.

Adres publiczny

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https://www.rsc.org/