



Specific interaction of metal ions with Cys-Xaa-Cys unit inserted into the peptide sequence.

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Streszczenie

In this work five peptides with Cys-Xaa-Cys motif were studied including Ac-Cys-Gly-Cys-NH₂, Ac-Cys-Pro-Cys-Pro-NH₂, their N-unprotected analogues and the N-terminal fragment of metallothionein-3, Met-Asp-Pro-Glu-Thr-Cys-Pro-Cys-Pro-NH₂. All these peptides were found to be very effective ligands for Ni²⁺, Zn²⁺ and Cd²⁺ ions. Potentiometric and spectroscopic (UV-Vis, CD and MCD) studies have proved that sulfur atoms are critical donors for the metal ions coordination. The amide nitrogen may participate in the metal ion binding only in the case when Gly is adjacent to Cys residues. Ac-Cys-Gly-Cys-NH₂ may serve as a low molecular weight model for cluster A, which is a binding unit of nickel ion in acetyl coenzyme A synthase. This bifunctional enzyme from anaerobic microorganisms catalyzes the formation of acetyl coenzyme A from CO, a methyl group donated by the corrinoid-iron-sulfur protein and coenzyme A. Other peptides studied in this work were Ac-Cys-Pro-Cys-Pro-NH₂ and Met-Asp-Pro-Glu-Thr-Cys-Pro-Cys-NH₂ originating from metallothionein sequence. These motifs are characteristic for the sequence of cysteine rich metallothionein-3 (MT-3) called also neuronal growth inhibitory factor (GIF). Cys-Pro-Cys-Pro fragment of protein was demonstrated to be crucial for the inhibitory activity of the protein.

Słowa kluczowe

Transition metal complexes, Thiolate coordination,
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