



Nickel(II) binding to Cap43 protein fragments.

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Streszczenie

Cap43 protein has been tested for metal binding domains. The protein, specifically induced by nickel compounds in cultured human cells, had a new mono-histidinic motif consisting of 10 amino acids repeated three times in the C-terminus. The 20-Ac-TRSRSHSTSEG-TRSRSHSTSEG (Thr³⁴¹-Arg-Ser-Arg-Ser-His³⁴⁶-Thr-Ser-Glu-Gly-Thr-Arg-Ser-Arg-Ser-His³⁵⁶-Thr-Ser-Glu-Gly³⁶⁰ – peptide 1) and the 30-Ac-TRSRSHSTSEG-TRSRSHSTSEG (Thr³⁴¹-Arg-Ser-Arg-Ser-His³⁴⁶-Thr-Ser-Glu-Gly-Thr-Arg-Ser-Arg-Ser-His³⁵⁶-Thr-Ser-Glu-Gly-Thr-Arg-Ser-Arg-Ser-His³⁶⁶-Thr-Ser-Glu-Gly³⁷⁰ – peptide 2) amino acids sequence has been analyzed as a site for Ni(II) binding. A combined pH-metric and spectroscopic (UV-visible, CD, NMR) studies of Ni(II) binding to both fragments were performed. The 20-amino acid peptide can bind one and two metal ions while the 30-amino acid fragment one, two and three metal ions. At physiological pH, depending on the metal to ligand molar ratio, peptide 1 forms the Ni₂L species while peptide 2 the NiL, Ni₂L and Ni₃L complexes where each metal ion is coordinated to the imidazole nitrogen atom of the histidine residue of the 10-amino acid fragment. Octahedral complexes at pH 8–9 and planar 4N complexes with (N_{lm}, 3N⁻) bonding mode at pH above 9, are formed. This work supports the existence of an interesting binding site at the COOH-terminal domain of the Cap43 protein.

Słowa kluczowe

Stability constants, Spectroscopic study, Nickel(II) complexes, Cap43 fragments

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