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The coordination of Ni^{II} and Cu^{II} ions to the polyhistidyl motif of Hpn protein: is it as strong as we think?.

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Streszczenie

Hpn, one of *Helicobacter pylori*'s nickel-accessory proteins, is an amazingly peculiar protein: Almost half of its sequence consists of polyhistidyl (poly-His) residues. Herein, we try to understand the origin of this naturally occurring sequence, thereby shedding some light on the bioinorganic chemistry of Hpn′s numerous poly-His repeats. By using potentiometric, mass spectrometric, and various spectroscopic techniques, we studied the Ni^{II}- and Cu^{II} complexes of the wild-type Ac-THHHHYHGG-NH_2 fragment of Hpn and of its six analogues, in which consecutive residues (His or Tyr) were replaced by Ala (Ala-substitution or Ala-scan approaches), thereby resulting in Ac-TAHHHYHGG-NH_2, Ac-THAHHYHGG-NH_2, Ac-THHAHYHGG-NH_2, Ac-THHHAYHGG-NH_2, Ac-THHHHAHGG-NH_2, and Ac-THHHHYAGG-NH_2 peptides. We found that the His4 residue is critical for both Ni^{II}- and Cu^{II}-ion binding and the effectiveness of binding varies even if the substituted amino acid does not take part in the direct binding interactions.

Adres publiczny

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