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Zn(II) and Ni(II) complexes with poly-histidyl peptides derived from a snake venom.

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The snake venoms are complex mixtures containing many bioactive peptides and proteins; some of them are aimed to protect the snake glands, where the venom is stored, until the latter is inoculated in the victim. In the venom of some vipers of the genus *Atheris*, a set of peptides containing poly-His and poly-Gly segments was recently found. Poly-His peptides are not rare in Nature. Although their exact biological function is most often unknown, one thing is certain: they have good binding properties towards the transition metal ions. As a matter of fact, the imidazole side chain of histidine is one of the groups most frequently involved in metal complexation in the active sites of metallo-enzymes. This is also true for snake-venom metallo-proteases, which contain Zn(II) and Ca(II) ions.

In the present paper, the complex-formation ability of the poly-His-poly-Gly peptide found in the venom of *Atheris squamigera* ($EDDH_9GVG_{10}$-NH_2) towards the Zn(II) and Ni(II) ions was investigated by means of thermodynamic and spectroscopic techniques. Two model peptides, derived from the poly-His portion of this peptide but where His residues were alternated with alanines (Ac-EDDAHAHAHAHAG-NH_2, and Ac-EDDHAHAHAHAHG-NH_2) were also studied, for the sake of comparison. The high affinity of these peptides for the metal ions under investigation was confirmed. In addition, it was demonstrated that the number of His residues in the peptide and their relative position play a main role in the complex-formation ability of the ligand. The very high affinity of $EDDH_9GVG_{10}$-NH_2 for Zn(II) can be the key for its role in the inactivation of the venom in the snake glands.

Słowa kluczowe

Zinc ion, nickel ion, Snake venom, Poly-His peptides, Complex-formation equilibria

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