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Chiral peptide nucleic acids having thymine and adenine in their side chain as specific ligands for Ni^{II} and Cu^{II}.

Autorzy

Justyna Brasuń

P. Ciapetti

Henryk Kozłowski

S. Ołdziej

M. Taddei

Daniela Valensin

Gianni Valensin

Nicola Gaggelli

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Streszczenie

Potentiometric and spectroscopic data, including NMR, CD and EPR results, as well as theoretical calculations showed that the insertion of a nucleic base into a peptide chain results in formation of very effective ligands (chiral peptide nucleic acids, C-PNAs) for Cu^{II} and Ni^{II}. The most effective ligand was that containing thymine base. The thymine moiety interacts with metal ion in the apical position *via* the O6 oxygen and forms a set of effective hydrogen bonds with the N-terminal amino group. In the case of adenine C-PNA, two nucleic bases may form stacking interactions, which also increases the complex stability. These interactions of nucleic bases mean that metal ion binding to peptide backbone nitrogens of PNAs leads to formation of complexes which are several orders of magnitude stronger than those obtained with oligoglycine. Metal ion binding to C-PNAs, on the other hand, induces specific conformations of the side chain groups, which would affect critically the self-recognition interactions between the C-PNA strands.

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