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Divalent metal ion binding to *Staphylococcus aureus* FeoB transporter regions

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Streszczenie

Transition metal ions such as iron, copper, zinc, manganese or, nickel are essential in many biological processes. Bacteria have developed a number of mechanisms for their acquisition and transport, in which numerous of proteins and smaller molecules are involved. One of the representatives of these proteins is FeoB, which belongs to the Feo (ferrous ion transporter) family. Although ferrous iron transport system is widespread among microorganisms, it is still poorly described in Gram-positive pathogens, such as *Staphylococcus aureus*. In this work, combined potentiometric and spectroscopic studies (UV–Vis, CD and EPR) were carried out to determine Cu(II), Fe(II) and Zn(II) binding modes to FeoB fragments (Ac-IDYHKLMK-NH_2, Ac-ETSHDKY-NH_2, and Ac-SFLHMVGS-NH_2). For the first time iron(II) complexes with peptides were characterized by potentiometry. All studied ligands are able to form a variety of thermodynamically stable complexes with transition metal ions. It was concluded that among the studied systems, the most effective metal ion binding is observed for the Ac-ETSHDKY-NH_2 peptide. Moreover, comparing preferences of all ligands towards different metal ions, copper(II) complexes are the most stable ones at physiological pH.

Słowa kluczowe

FeoB transporter, Metal-peptide complexes, iron(II) complexes, Copper(II) complexes, Zinc(II) complexes

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