Metal binding ability of cysteine-rich peptide domain of ZIP13 Zn^{2+} ions transporter.

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Rok wydania

2011

Czasopismo

Inorganic Chemistry

Numer woluminu

50

Strony

6135-6145

DOI

10.1021/ic200270p

Kolekcja

Naukowa

Język

Angielski

Typ publikacji

Artykuł

Streszczenie

The coordination modes and thermodynamic stabilities of the complexes of the cysteine-rich N-terminal domain fragment of the ZIP13 zinc transporter (MPGCPCPGCG–NH_2) with Zn^{2+}, Cd^{2+}, Bi^{3+}, and Ni^{2+} have been studied by potentiometric, mass spectrometric, NMR, CD, and UV–vis spectroscopic methods. All of the studied metals had similar binding modes, with the three thiol sulfurs of cysteine residues involved in metal ion coordination. The stability of the complexes formed in solution changes in the series $Bi^{3+} \gg Cd^{2+} > Zn^{2+} > Ni^{2+}$, the strongest being for bismuth and the weakest for nickel. The N-terminal fragment of the human metalothionein-3 (MDPETCPCP–NH_2) and unique histidine- and cysteine-rich domain of the C-terminus of *Helicobacter pyroli* HspA protein (Ac–ACCHDHKKH–NH_2) have been chosen for the comparison studies. It confirmed indirectly which groups were the anchoring ones of ZIP13 domain. Experimental data from all of the used techniques and comparisons allowed us to propose possible coordination modes for all of the studied ZIP13 complexes.

Adres publiczny

https://doi.org/10.1021/ic200270p

Strona internetowa wydawcy

https://www.acs.org/content/acs/en.html