

Metal specificity of the Ni(II) and Zn(II) binding sites of the N-terminal and G-domain of *E. coli* HypB.

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Streszczenie

HypB is one of the chaperones required for proper nickel insertion into [NiFe]-hydrogenase. *Escherichia coli* HypB has two potential Ni(II) and Zn(II) binding sites—the N-terminal one and the so-called GTPase one. The metal-loaded HypB–SlyD metallochaperone complex activates nickel release from the N-terminal HypB site. In this work, we focus on the metal selectivity of the two HypB metal binding sites and show that (i) the N-terminal region binds Zn(II) and Ni(II) ions with higher affinity than the G-domain and (ii) the lower affinity G domain binds Zn(II) more effectively than Ni(II). In addition, the high affinity N-terminal domain, both in water and membrane mimicking SDS solution, has a larger affinity towards Zn(II) than Ni(II), while an opposite situation is observed at basic pH; at pH 7.4, the affinity of this region towards both metals is almost the same. The N-terminal HypB region is also more effective in Ni(II) binding than the previously studied SlyD metal binding regions. Considering that the nickel chaperone SlyD activates the release of nickel and blocks the release of zinc from the N-terminal high-affinity metal site of HypB, we may speculate that such pH-dependent metal affinity might modulate HypB interactions with SlyD, being dependent on both pH and the protein's metal status.

Adres publiczny

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