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Candida albicans zincophore and zinc transporter interactions with Zn(II) and Ni(II).

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Streszczenie

The interaction between the Pra1 zincophore and the Zrt1 zinc(ii) transporter is crucial for adequate Zn(ii) acquisition in Candida albicans, the most common cause of fungal infections in humans. Pointing out the precise Zn(ii) binding site on Zrt1 and describing the thermodynamics of such binding are important steps, which allow one to understand the interactions between Pra1, Zn(ii) and Zrt1. Zrt1 coordinates Zn(ii) via the side chains of ^{156}His, ^{161}His, ^{162}Cys and ^{168}His, and this binding is stronger than the binding of Zn(ii) to Pra1, allowing efficient zinc transfer from the zincophore to the zinc transporter. Additional analysis of Pra1 and Zrt1 complexes with Ni(ii), another metal ion necessary for fungal survival, shows the specificity of the studied system - Ni(ii) does not interfere with the Zn(ii) binding to Pra1, though it might form a comparably stable complex with Zrt1.

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