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Specificity in the Cu^{2+} interactions with prion protein fragments and related His-rich peptides from mammals to fishes.

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Streszczenie

The prion proteins may play a critical role in copper homeostasis and the antioxidant activity in the brain. This review presents the state of art in the studies on Cu^{2+} prion systems. The proteins discussed are from different species from mammals to fishes. All proteins are His-rich and the research discussed clearly indicates the basic role of imidazole side chains and the adjacent amide nitrogen atoms in metal ion binding. Prions represent the family of proteins with new mode of Cu^{2+} binding which includes the amide nitrogen coordination. The multi-imidazole coordination is also likely and it can play a critical role in the antioxidant activity of the copper–prion complexes. The combination of the imidazole and amide nitrogen atoms to Cu^{2+} ions could also be relevant in histidine-rich peptide antibiotics including demegen. The impact of peptide sequence and His positions on copper binding ability is also discussed.

Słowa kluczowe

Prion proteins, Binding of Cu2+, His-rich peptides

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