Structural characterization of Cu^{2+}, Ni^{2+} and Zn^{2+} binding sites of model peptides associated with neurodegenerative diseases.

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Streszczenie

Metal ions, especially redox active copper, are thought to play critical roles in neurodegenerative disorders. As a matter of fact, metal binding may result into severe conformational changes of proteins involved in neurodegeneration. The present review describes the interactions of metal ions with model peptides mimicking metal binding sites of such proteins, including the prion protein, the β-amyloid and the α-synuclein that have been related to the pathological onset of spongiform encephalopathies, Alzheimer's disease and Parkinson's disease, respectively. Using short protein fragments provides successful tools for characterizing the metal ion interaction with protein domains devoid of any defined secondary structure, and allows one to gain structural information on the metal ion binding properties of the corresponding proteins. Moreover, such an approach based on simplified models yields a multidimensional knowledge that would be never accessible for the natural systems, thus providing a significant and powerful tool for biochemical studies.

Słowa kluczowe

copper, zinc, model peptide, Neurodegeneration, structure

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