Effects of divalent metal ions on the αB-crystallin *chaperone-like* activity: spectroscopic evidence for a complex between copper(II) and protein.

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Streszczenie

αB-crystallin is a small heat shock protein, showing chaperone-like activity, that is expressed in the lens and in several other tissues. The role of some metal ions in the αB-crystallin biology starts to be well documented. In some neuro-degenerative pathologies, like Parkinson and Alzheimer's diseases, αB-crystallin is expressed at high levels. In the same pathologies an accumulation of divalent metal cations is observed. In order to investigate the interactions between human αB-crystallin and divalent metal ions, the effect of copper, zinc and calcium on the *chaperone-like* activity of the protein has been studied. Copper and zinc at concentrations 0.1 and 1 mM significantly increase the *chaperone-like* activity, whereas calcium 1 mM completely inhibits activity. Electron paramagnetic resonance (EPR) and circular dichroism (CD) spectra indicate the possible complex formation between Cu(II) and protein at physiological pH. Molecular modeling calculations, carried out for the probable Cu(II) binding site, suggest that a complex with three histidine residues is possible.

Słowa kluczowe

αB-crystallin, Metal complexes, Chaperone-like activity

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