Is the monomeric prion octapeptide repeat PHGGGWGQ a specific ligand for Cu^{2+} ions?.

Autorzy

Marek Łuczkowski

Henryk Kozłowski

M. Stawikowski

Krzysztof Rolka

Elena Gaggelli

Daniela Valensin

Gianni Valensin

Rok wydania

2002

Czasopismo

Journal of the Chemical Society, Dalton Transactions

Strony

2269-2274

DOI

10.1039/B201040M

Kolekcja

Naukowa

Język

Angielski

Typ publikacji

Artykuł

Streszczenie

Ac-PHGGGWGQ-NH_2, an octarepeat peptide fragment of prion, is a relatively effective ligand for Cu^{2+} ions. At a pH of about 7.4 the major binding sites involve the imidazole nitrogen and two amide nitrogens of ^{3}Gly and ^{4}Gly giving a $CuH_{-2}L$ species. The stability of the complex formed is similar to other peptides having a similar type of coordination. The NMR spectra indicate that in $CuH_{-2}L$ the complex side chain of the Trp residue is located very close to the metal ion. The geometry around the Cu^{2+} ion seems to be slightly distorted from the tetragonal one. In strongly basic solution the coordination involves an additional amide nitrogen. In $CuH_{-2}L$, $CuH_{-3}L$ and $CuH_{-4}L$ complexes the amide nitrogens involved in the metal ion binding are those placed towards the C-terminal from the His residue. The N-terminal of the unprotected octapeptide is very effective in binding the Cu^{2+} ion although at high pH the imidazole nitrogen may not be involved in metal ion binding.

Adres publiczny

https://doi.org/10.1039/B201040M

Strona internetowa wydawcy

https://www.rsc.org/