

NMR studies of the Zn²⁺ interactions with rat and human β -amyloid (1-28) peptides in water-micelle environment.

Autorzy

Elena Gaggelli
Anna Janicka-Kłós
Elżbieta Jankowska
Henryk Kozłowski
Caterina Migliorini
E. Molteni
Daniela Valensin
Gianni Valensin
E. Wieczerek

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Alzheimer's disease is a fatal neurodegenerative disorder involving the abnormal accumulation and deposition of peptides (amyloid- β , A β) derived from the amyloid precursor protein. Here, we present the structure and the Zn²⁺ binding sites of human and rat A β (1-28) fragments in water/sodium dodecyl sulfate (SDS) micelles by using ¹H NMR spectroscopy. The chemical shift variations measured after Zn²⁺ addition at $T > 310$ K allowed us to assign the binding donor atoms in both rat and human zinc complexes. The Asp-1 amine, His-6 N δ , Glu-11 COO⁻, and His-13 N ϵ of rat A β ₂₈ all enter the metal coordination sphere, while His-6 N δ , His-13, His-14 N ϵ , Asp-1 amine, and/or Glu-11 COO⁻ are all bound to Zn²⁺ in the case of human A β ₂₈. Finally, a comparison between the rat and human binding abilities was discussed.

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