# Coordination abilities of N-terminal fragments of α-synuclein towards copper(II) ions: a combined potentiometric and spectroscopic study.

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Streszczenie

Copper(II) complexes of the 1–17 (MDVFMKGLSKAKEGVVA-$NH_2$), 1–28 (MDVFMKGLSKAKEGVVAAAEKTKQGVAE-$NH_2$), 1–39 (MDVFMKGLSKAKEGVVAAAEKTKQGVAEAPGKTKEGVLY-$NH_2$) and 1–39 (A30P) fragments of α-synuclein were studied by potentiometric, UV–Vis (UV–visible), CD (circular dichroism) and EPR (electron paramagnetic resonance) spectroscopic methods to determine the stoichiometry, stability constants and coordination modes of the complexes formed. The β-carboxylate group of Asp residue in second position of the peptide chain coordinates strongly to Cu(II) ion over the pH range 4–9.5 to give unusually stable 2N complex with {$NH_2$, $N^-$, β-$COO^-$, $H_2O$} coordination mode. At pH above 7 the results suggest the formation of 2N, 3N, 4N complexes (in equatorial plane) and the involvement of the lateral $NH_2$ group of Lys residue in the axial coordination of Cu(II) ion. In CD spectra $\sigma$ ($\varepsilon$-$NH_2$–Lys) → Cu(II) charge transfer transition is observed. Addition of the 18–28 and 18–39 fragments to the 1–17 peptide does not change the coordination mode and the 1–39 fragment forms the Cu(II) complexes with higher stabilities compared to those of the 1–17, 1–28 and 1–39(A30P) fragments of α-synuclein.

Słowa kluczowe

α-synuclein, Copper(II) complexes, Stability constants, Spectroscopic studies

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