

Mono- and polynuclear copper(II) complexes of alloferons 1 with point mutations (H6A) and (H12A): stability structure and cytotoxicity.

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Streszczenie

Mononuclear and polynuclear copper(II) complexes of the alloferons 1 (Allo1) with point mutations (H6A) H(1)GVSGA(6)GQH(9)GVH(12)G-COOH (Allo6A) and (H12A) H(1)GVSGH(6)GQH(9)GVA(12)G-COOH (Allo12A) have been studied by potentiometric, UV-visible, CD, EPR spectroscopic, and mass spectrometry (MS) methods. Complete complex speciation at different metal-to-ligand ratios ranging from 1:1 to 3:1 was obtained. At physiological pH 7.4 and a 1:1 metal-to-ligand molar ratio, the Allo6A and Allo12A peptides form CuL complexes with the 4N {NH₂, N(Im)-H(1), 2N(Im)} binding mode. The amine nitrogen donor and the imidazole nitrogen atoms (H(9)H(12) or H(6)H(9)) can be considered to be independent metal-binding sites in the species formed for the systems studied. As a consequence, di- and trinuclear complexes for the metal-to-ligand 2:1 and 3:1 molar ratios dominate in solution, respectively. The induction of apoptosis in vivo in *Tenebrio molitor* cells by the ligands and their copper(II) complexes at pH 7.4 was studied. The biological results show that copper(II) ions in vivo did not cause any apparent apoptotic features. The most active was the Cu(II)-Allo12A complex formed at pH 7.4 with a {NH₂, N(Im)-H(1), N(Im)-H(6), N(Im)-H(9)} binding site. It exhibited 123% higher of caspase activity in hemocytes than the native peptide, Allo1.

Adres publiczny

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<https://www.acs.org/content/acs/en.html>