Copper(II) complexes of the *Neb*-colloostatin analogues containing histidine residue structure stability biological activity.

Autorzy

Teresa Kowalik-Jankowska

Agnieszka Kadej

Mariola Kuczer

Elżbieta Czarniewska

Rok wydania

2017

Czasopismo

Polyhedron

Numer woluminu

134

Strony

365-375

DOI

10.1016/j.poly.2017.06.023

Kolekcja

Naukowa

Język

Angielski

Typ publikacji

Artykuł

Streszczenie

Neb-colloostatin was discovered during the isolation ofNeb-TMOF from the ovary of the grey fleshflyNeobellieria bullata. Its amino acid sequence was determined as SIVP4LGLP8VP10IGP13IVVGP18R. The ana-logues with point mutation P4H and P8H were synthesized and their copper(II) complexes were studiedby potentiometry, UV–Vis, circular dichroism (CD), and electron paramagnetic resonance (EPR) spectro-scopic and mass spectrometry (MS) methods. To obtain a complete complex speciation 1:1 and 2:1metal-to-ligand molar ratios for both peptides were studied. At physiological pH (7.4), both peptidesform mononuclear the CuH-1L complex with 3N{NH2,N,NIm} coordination mode. For the P4H andP8H peptides at high pH (11) the binding sites of copper(II) ions are quite different. For the CuH-4L com-plex of the P4H peptide the 4N{4N} coordination mode is dominante, while for the P8H peptide the 4N{NIm,3N} binding site towards N-termini is formed with (6,5,5) chelate ring. At high pH the P8H peptidecannot form the 4N {NH2,3N} complex because of the presence of the Pro4residue in the amino acidsequence (a break point in the metal coordination). At pH 7.4 dinuclear the Cu2H-4L complexes dominatewith suggested the 3N{NH2,2N}3N{NIm,2N}binding sites where the 3N{NIm,2N} coordination modefor the P4H peptide towards C-termini, and for P8H peptide towards N-termini are formed. The inductionof apoptosisin vivoinTenebrio molitorcells by the ligands and their copper(II) complexes at pH 7.4 wasstudied. The systems studied have lower apoptotic properties compared to those ofNeb-colloostatin andits copper(II) complex at pH 7

Słowa kluczowe

copper(II) complexes, Neb -colloostatin analogues, Stability, structure, biological activity