Mixed ligand zinc(II) and cadmium(II) complexes containing ceftriaxone orcephradineantibiotics and different donors


Abstract:

Mixed ligand complexes of Zn(II) and Cd(II) containing ceftriaxone (Naceftria) or cephradine (Hcefphr) antibiotics and other ligands have been prepared and characterized by elemental analysis, spectral, biological and thermal studies. The complexes have the general formulae: [Zn(ceftria)(diamine)(OAc)].xH 2O, [Cd(ceftria)(diamine)Cl(H 2O)].xH 2O, [M(ceftria) (L)(H 2O) 2],xH 2O, [Cd 2(cephr)(diamine)Cl 3(H 2O)].xH 2O, [Cd 3(cephr)(μ-HL)Cl 5(H 2O)].2H 2O where diamine = 2,2'-bipyridyl or α-phenanthroline; M= Cd(II) or Zn(II), L= glycine, proline or methionine and x=0-6. Ceftriaxone chelates to the metal ions as a bidentate monoanion ligand through the β-lactam carbonyl and carboxylate group. On the other hand, cephradine coordinates to Cd(II) ions as a uninegative tetradentate NOON ligand via the carboxylate oxygen, β-lactam nitrogen besides the carbonyl oxygen and the amino nitrogen of the side chain amide group. Regarding the amino acids, it was found that they coordinate bidentately through NH 2 and COO - groups in the case of ceftriaxone complexes. In case of Cd-cephradine-amino acid complexes the amino acids act as μ-O,O bridging ligands.

Published In:

Journal of the Argentine Chemical Society, Volume 97, Issue 2, 149-165