

Synthesis and Identification of Glycineamide Complexes of Divalent Metal Ion

*Nada A . Al – Najjar

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Abstract :

Complexes of some divalent metal ions with glycineamide (GlyA) were prepared and identified by IR, UV-Visible, atomic absorption , magnetic susceptibility and conductivity measurements .

The ligand (GlyA) and metal ions were brought into reaction using (1:2) metal: ligand molar ratio in ethanolic medium.

The results showed that the ligand (GlyA) was coordinated to Mn^{2+} , Co^{2+} , Ni^{2+} , Cu^{2+} and Zn^{2+} ions through the carbonyl oxygene and the amino nitrogen atoms while it was coordinated through the two amino nitrogen atoms with Cd^{2+} and Hg^{2+} ions .

From the results obtained the following general formula has been given for the prepared complexes $[M(GlyA)_2Cl_2].xH_2O$ with an octahedral geometry around the metal ions for all the complexes.

Where:

$M = Mn^{2+}$, Co^{2+} , Ni^{2+} , Cu^{2+} , Zn^{2+} , Cd^{2+} and Hg^{2+} .

GlyA= Glycineamide ($H_2N - CH_2 - \overset{O}{\parallel} C - NH_2$)

X = two molecules of water in Mn(II) and Cu(II) complexes .

Introduction :

The metal – ion chemistry of amino acid ligand has now become a major subdivision in inorganic chemistry .It showed wide interesting applications in nature⁽¹⁾and biological system^(2,3),such as in the form of different ternary complexes⁽⁴⁾.They are drew attention to the synthesis and remarkable physical properties of glycine and other amino acids⁽⁵⁻¹⁰⁾.

The Knowledge of metal ion interaction with the amide group will provide insight into protein structure and functional pathways in biological system⁽¹¹⁾,therefore we report the synthesis and spectral studies of some metal ion complexes of ligand glycineamide which contents amide group.

Experimental:

a- Materials and measurements :

Metal salts ($MnCl_2.4H_2O$, $CoCl_2.6H_2O$, $NiCl_2.6H_2O$, $CuCl_2.2H_2O$, $ZnCl_2$, $CdCl_2.2.5H_2O$ and $HgCl_2$) were obtained from fluka and merck in high purity , ligand (glycineamide) from B.D.H .

The I.R spectra of the prepared compounds were recorded in the region $(4000-200)cm^{-1}$ using (SHIMADZU FT.IR-84005) Fourier Transform Infrared Spectrophotometer as cesium-iodid disc . The UV- VIS spectra were recorded in ethanol solution ($10^{-3}M$) by using (SHIMADZU UV-VIS-160A) Spectrophotometer , metal contents of the complexes were determined by atomic absorption technigue by using (SHIMADZU AA 680G) Atomic

* College of Science for Women / Chemistry Department/ University of Baghdad