Bioinorganic and Bioorganic Chemistry

Studies on the Formation of Complexes between Mn(II), Co(II), Ni(II) and Cu(II) Cations and Diphosphate, Adenosine Monophosphoric Acid and Adenosine Diphosphoric Acid Anions in Water–Tetramethyl Ammonium Bromide 0.2 *M* Medium

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The equilibria of the formation of complexes between the metallic cations Mn^{2+}, Co^{2+}, Ni^{2+} and Cu^{2+} and the anionic ligands diphosphate ($HP_2O_7^{3-}$, $P_2O_7^{4-}$) adenosine monophosphoric (AMP^{2-}) and adenosine diphosphoric ($HADP^{2-}$, ADP^{3-}) have been studied, in a water–TMA^+Br^- medium, by variable pH potentiometry and by pH-stat potentiometry [1, 2].

This work allows us essentially to admit the existence of four types of complexes [MHL, $M(HL)_2$, ML, ML_2] and to determine the values of their corresponding formation constants [1, 3–8]. The thermodynamic quantities corresponding to the formation of complexes have been determined by Van t'Hoff rule and by pH-stat calorimetry [9]. The values obtained by these two different methods are quite consistent and point out the importance of the variations of entropy (ΔS) in the formation of complexes (*e.g.* Table I).

With regard to the variations of entropy, the results show that the values of ΔS are important and increasing with temperature. This phenomenon can be explained by a reorganization of the molecules of the water of the medium between the metallic cations, the ligands and the resulting complexes, consequently to the important disappearance of electric charges.

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The Formation and Structure of Cu(II)–Clupeine Z Complexes

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The interaction of metal ions with DNA and the role it plays in biological processes has been a field of

TABLE I. Comparison between the Results Obtained by Potentiometry and by Calorimetry, TMA^+Br^- 0.2 *M* Medium, pH = 7, at 25 °C.

Complexes	ΔH(Kcal/mol)		log *K*		ΔG(Kcal/mol)		ΔS(cal/mol)	
	pot.	cal.	pot.	cal.	pot.	cal.	pot.	cal.
CoAMP	−0.1	−0.18	2.34	2.37	−3.20	−3.22	10.40	10.18
NiAMP	−2.1	−2.46	2.46	2.48	−3.36	−3.38	3.5	3.05