Chapter 7

SUMMARY

The research work on synthesis and physiological investigation of mixedligand complexes of copper(II), zinc(II) and cadmium(II) have addressed several key issues pertaining to the chemistry of the chosen metals. The highlights of the results are presented as under:

(a) Appropriate reaction strategy has been devised and conditions (pH, temperature, molar ratio of reactants, order of addition of ligands etc.) for the formation of newer mixedligand compounds of the chosen metals were optimised.

(b) Aqueous medium, simpler, easy to manipulate methods are the characteristic features of the syntheses.

(c) Anionic as well as mononuclear molecular complexes were accessed.

(d) Variety of coligands and different halides chosen for the present research and successful synthesis of mixed ligand complexes, in a way, confirms the generality of the synthetic routes devised.

(e) Mixed coordination polyhedra with biogenic coligands can serve as good low molecular weight biomimetic models. Incorporation of aquo (H_2O) group in some complexes provide interesting structural motifs of relevance to bioinorganic chemistry and catalysis.

(f) Delicate control of the reaction strategy has been often shown to yield different and newer products.

(g) Similar conditions often did not afford the desired compound looked for.

(h) Cadmium and zinc expectedly revealed rather similar trends in ternary compounds formation while those for copper are quite different.

(i) Conditions under which cadmium formed iodo complexes were not found to be congenial for the synthesis of similar type of products in the case of copper and zinc. A relatively bigger size cadmium ion favoured a larger iodide ligand along side the organic coligand while this was not possible for copper and zinc which were comparatively of much smaller size.

(j) The results obtained are anticipated to be very useful in accessing vast array of newer and novel Cu, Zn and Cd complexes.

(k) The binding modes of the ambidentate aminoacids vary as the metal changes and also are dependent on the reaction condition.

(l) The compounds described in this dissertation are new and valuable addition to the wealth of coordination compounds of Cu(II), Zn(II) and Cd(II).

(m) The strategies of synthesis devised as a part of the present Ph.D. program can serve as paradigm for accessing newer array of mixed ligand compounds.

(n) The cadmium-aminoacid / benzimidazole compounds are of biochemical relevance in relation to their antimicrobial activity.

(o) The mixed ligand zinc-amino acid complex (**14**) has been found to be very effective dietary supplement for eri silk larva leading to ~200% increase in silk productivity. The occurrence of amino acid and zinc both seem to have contributed to the unprecedented busting effect observed.

(p) An assessment of other economic parameters of eri silk as well similar studies involving the other varieties of silkworm cultured in the North East India would form a future agenda of research.

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