Coordination chemistry has evolved as an important subject area in current research activities. Coordination complexes show diversity in structures depending on the metal ion, its coordination number and the denticity of the ligands used. This has led to their usage as sensors, medicines etc. The presence of more electronegative nitrogen and oxygen on the ligand is established to enhance the coordinating possibilities of ligands. In this aspect, a great deal of attention has been focused on the complexes formed by transition metal ions with hydrazones. Recent years witnessed an intensive investigation of the coordination chemistry of Schiff bases due to their interesting coordination properties and diverse applications.

The chemistry of hydrazones has received considerable attention due to their proliferate applications. The transition metal complexes of them found applications in biology, medicine and industry.

The present work deals with the complexation of hydrazones with various transition metal ions. Complexes of vanadium(IV), manganese(II), cobalt(II), copper(II) and zinc(II) have been prepared. Various spectral techniques are employed for characterization.

The work is presented in seven chapters and the last section deals with summary and conclusion. The studies reveal that the acylhydrazones coordinate in different modes depending on the reaction conditions, resulting in complexes with varying geometrical configurations.

The work in this thesis was carried out by the author in the Department of Applied Chemistry during 2006-2010. The primary aim of these investigations was to probe the physicochemical studies of hydrazones and their transition metal complexes.
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