

## Analysis of Some Transition Metal Complexes of Biologically Active Ligands

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### ABSTRACT

Several organic compounds containing nitrogen and sulphur are reported in the literature to possess antifungal, antibacterial, antimalarial, antitubercular, anticarcinogenic and several other pharmacological properties. Complex formation has been suggested as one of the important mechanism for drug action, as metal complexes have been reported to play an important role in biological activities of drugs. The role of metal ions in the biological system is perceived in connection with the enzymes, polypeptides and amino acids. A number of metal chelates have been found to play an important role in plant photosynthesis.

**KEYWORDS:** Antimalarial, antitubercular, anticarcinogenic

### INTRODUCTION:

Heterocyclic compounds are cyclic compounds containing a hetero atom in the ring. The common hetero atoms are oxygen, nitrogen and sulphur. The important heterocyclic nucleuses are pyridine, quinoline, pyran, pyrazine, pyrimidine, pyrrole, indole, furan, oxazole, thiazole etc. The heterocyclic compounds are commonly found in the plant and animal kingdom, some of them are essential for physiological action. Heterocyclic compounds are having their own importance in various fields of theoretical and applied chemistry. They are used in industries as anticorrosive reagent and corrosion inhibitors 1; 2 for brass and copper. Some of the heterocyclic compounds are used as drugs and in such compounds the heterocyclic nuclei played a significant role in the cure of different diseases. Some of them are pyrazole, thiazole tetrazole, thiazolyl benzimidazole possess anthelmintic activity against nematodes infecting the gastro intestinal tract of domestic animals. Transition metal ions have a tendency to form complexes with ligand. This tendency is due to their incomplete d-orbital. Several heterocyclic compounds are known, which act as ligands and form complexes with various metal ions. These metal complexes are used in the field of medicine and analytical chemistry. Some of the metal ions plays an important role in biological system. Metal complexes of amino acids and complexes of platinum and palladium with sulphur and nitrogen donar ligands have been reported as anti-tumour reagents. Recently in cancer chemotherapy, several heterocyclic transition metal complexes have been used. Oxazole, thiazole, oxazoline and thiazoline have attracted the attention of many workers due to their chemistry and wide range of their pharmaceutical activity. They are mainly used as analgesic, nematocides, bactericides and fungicides. Thiazole and its derivatives possess antimalarial, antifungal, antibacterial and antitubercular activities. Several heterocyclic compounds form complexes with transition metal ions and these complexes have shown importance in the field of medicine and analytical chemistry. Recently a large number of pharmaceutical applications of oxazole and oxazole derivatives like hypertensive, analgesic, antiinflammatory, antibacterial, antiviral, antitubercular, anticonvulsant, urinary tract infection, sedative, cardiac stimulant, antihistaminic, muscle relaxant and hypotensive, have been reported. Oxazoline derivatives have been of interest because of their plant growth regulating activity as well as their antibacterial<sup>21</sup> and antifungal character. A very few scattered references are available on metal complexes of oxazole and thiazole which shows antifungal activities. The survey of the literature revealed that no systematic work have been done on the structural and biological aspects of transition metal complexes of substituted oxazole, oxazoline, thiazole and thiazoline, so it is worth while to prepare transition metal



