

**Minor research project of Ms Rachael Natash Mary entitled “Synthesis, Spectral Characterisation, Electrochemical and Microbial studies of Some Schiff base complexes with transition element cations.” Sanctioned by UGC, vide sanction letter no: MRP(S)-0122/12-13/KAMA002/UGC-SWRO dated 23-09-2013**

## **EXECUTIVE SUMMARY**

Metal complexes of Schiff bases have played a central role in the development of co-ordination chemistry. During the past two decades, considerable attention has been paid to the chemistry of the metal complexes of schiff base containing nitrogen and other donors.

Schiff bases derived from an amino and carbonyl compound are an important class of ligands that coordinate to metal ions via azomethine nitrogen and have been studied extensively. Schiff bases have wide applications in food industry, dye industry, analytical chemistry, catalysis, fungicidal, agrochemical and biological activities.

In the present work schiff's bases were prepared using substituted 'mercapto triazoles with aromatic aldehydes' followed by complexes of these ligands with transition metals like Co(II), Zn(II),Ni(II). The purity of the compounds prepared was studied by spectral studies.

### **EXPERIMENTAL PROCEDURE**

Thiocarbohydrazide (TCH) was prepared by the dropwise addition of 0.2 mole carbondisulphide to 0.4 mole of hydrazine hydrate in 50ml distilled water with stirring followed by refluxing for an hour. Product obtained was filtered, dried and recrystallised from water.

Triazole was prepared by refluxing a mixture of TCH and Propanoic acid for four hours. Product obtained was filtered, dried and recrystallised from hot water. Same procedure was repeated by taking acetic acid.

Schiff base was prepared by refluxing a mixture of the above prepared triazole with benzaldehyde in absolute alcohol containing drops of sulphuric acid for three hours. The ligand so obtained was filtered, dried and recrystallised from alcohol.

A solution of zinc acetate in alcohol was heated nearly to boiling .A hot solution of schiff base in ethanol was added dropwise. The solution was digested over a water bath for an hour. A white solid which slowly separated was filtered and washed repeatedly with hot, warm ethanol and ether. The complex was dried in hot air oven at 110°C .

Schiff bases taking triazoles and other aldehydes were also synthesized. Complex of Schiff base with Cobalt and Nickel were also prepared. Organic preparations carried out resulted in good yield of the product

### **CHARACTERISATION**

**FTIR**–Infrared spectra of Schiff base complexes were recorded using ThermoScientific FTIR iD3 ATR Nicolet iS5 spectrometer. IR spectrum of the Schiff base complexes showed the absence of carbonyl group in the spectra indicating the formation of Schiff base complex.

**UV-Visible Spectra.** The electronic absorption spectra of the Schiff-base ligand and their complexes were recorded at room temperature using DMF as solvent. UV-Visible spectra showed absorption bands characteristic of the Schiff base.