

# SYNTHESIS AND STUDY OF ANTI BACTERIAL ACTIVITY CU(II) COMPLEXES OF SCHIFF BASE LIGAND

Dr. Rakesh Ranjan

M.Sc. Ph.D.

B.R.A.Bihar University, Muzaffarpur.

**ABSTRACT :** The schiff base has been prepared by refluxing O-Bromobenzaldehyde with S-benzyl dithiocarbamate in alcoholic medium and form Co-ordination compound of Cu(II) metal ions. These complexes were characterised by elemental analysis, electronic spectra, NMR, and IR spectral studies. The possible structures for all the metal complexes are reported here. The antibacterial activity of the Schiff Base and these complexes have also been screened.

**Keywords :** Antibacterial, Schiff Base, Complexes, dithiocarbamate.

## I. INTRODUCTION

The Schiff Base ligands are important ligands because they are easily prepared by the condensation of aldehydes and imines. Schiff Base Ligands are able to co-ordinate many different metals and to stabilize them in various oxidation states, enabling the use of Schiff Base metal complexes for the large variety of useful catalytic transformations. Moreover interest in exploring the metal ion complexes with Schiff base ligands has continually increased, since it has been recognized that many of such complexes may serve as biologically important as well as naturally occurring ionophores.

## II. EXPERIMENTAL

Melting points were determined in open capillaries and are uncorrected. The purity of the compounds have been checked by TLC using silica gel-G. Analytical reagents grade chemicals were used. The IR spectra of ligands and its complexes were recorded on a Perkin-Elmer 283 spectra photometer in suitable region. Electronic absorption spectra were obtained on a spectra scan. The NMR spectral analysis were performed on a Bruker advance spectrophotometer using TMS as an internal standard.

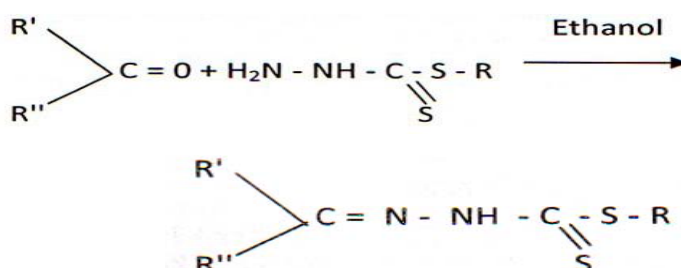
### PREPARATION OF S-BENZYL DITHIOCARBOZAL

The S-Benzyl dithiocarbamate has been prepared by standard and suitable method.

### PREPARATION OF SCHIFF BASE

The Schiff base has been prepared by mixing a solution of S-benzyl dithiocarbamate in ethanol was added to a solution of O-bromo benzaldehyde. The mixture was refluxed for one hour and cooled the yellow crystals and formed, were filtered off and recrystallized from ethanol.

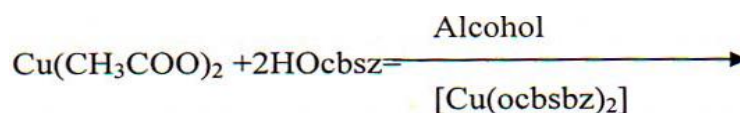
Schiff base ligands was synthesized by the following equations -



Where R = C<sub>6</sub>H<sub>4</sub>Br, R' = H, R'' = CH<sub>2</sub>C<sub>6</sub>H<sub>5</sub>

### III. PREPARATION OF METAL COMPLEXES

The Schiff base metal complexes under examination were prepared by mixing 0.001 m mol of 20ml of ethanolic solution of corresponding metal salt Cu (CH<sub>3</sub>COO)<sub>2</sub> with the 0.002 in mol of the Schiff Base in the same amount in the same solvent, the mixture were refluxed for 3-4 on water bath. The mixture was then cooled and the product were filtered with suction washed with ethanol and dried. The coloured solid are obtained and are mostly soluble in DMSO and DMF.



### IV. RESULTS AND DISCUSSION

The complexes are stable and can be stored for a long period. The elemental analysis data of the ligand and its complexes indicates formulation of 1:2 [M:L] ratio of the formula of [Cu(ocbsz)<sub>2</sub>]. The molar conductance of the complexes was determined at a concentration 1 x 10<sup>-3</sup>M DMF.

**Table — 1**

Analytical NMR spectral data and other physical properties of the Schiff base and their metal complexes

Compound	Ligand/Complexes	Colour	Elemental analysis		Molar condu	Chemical Schiff	R.H.
			N	S			
1.[Cu(ocbsz) <sub>2</sub> ]	Ligand	brown	7.7 (8.0)	18.6 (18.3)	6.7	4.578	7.5.7.9M

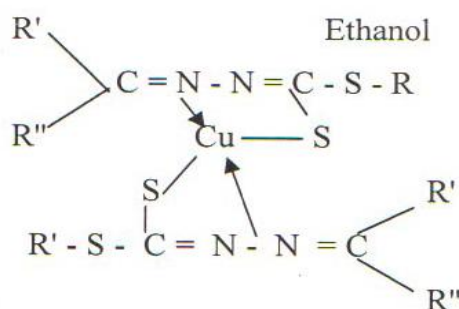
**Table — 2**

Infrared and electronic absorption spectra of Schiff base ligand and their metal complexes

Compound	Ligand/Complexes	V(C=N)	V(N-N)	V(C-Br)	UV-vis(um)
1	[CU(ocbsz) <sub>2</sub> ]	1599	1016	748	260,340

The electronic spectra of the Schiff base and its metal complexes were recorded in DMSO and given in the table 2.

On the basis of above studies and results the proposed structures for the complexes can be shown as



Where R = C<sub>6</sub>H<sub>4</sub>Br, R' = H, R'' = CH<sub>2</sub>C<sub>6</sub>H<sub>5</sub>

### ANTI BACTERIAL ACTIVITY

The schiff base and metal complexes were screened against S. aureus and E. Coli bacteria and fungi like Aspargillus flavus, Aspargillus miger, funigatus by using angar differation method. A nutrient agar at 40°C was poured in different and well cleared pefridithes and allowed to solidify. Amplicil in and tetracyctive were used as the standard drugs.

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