



## Synthesis, Characterization and Antimicrobial Evaluation of Transition Metal(II) Complexes with Isatinimine Schiff bases and 8-Hydroxyquinoline

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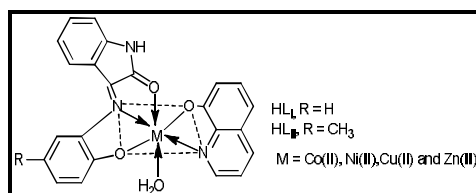
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### ABSTRACT

Cobalt(II), nickel(II), copper(II) and zinc(II) complexes of Isatinimine Schiff base ligands ( $HL_I$ - $HL_{II}$ ) derived from isatin with 2-aminophenol ( $HL_I$ ), 2-amino-4-methyl phenol ( $HL_{II}$ ) and heterocyclic nitrogen base 8-hydroxyquinoline (HQ) have been synthesized. The structure of all the compounds has been discussed on the basis of elemental analysis, molar conductance and spectroscopic techniques (IR, NMR and mass). Isatinimine Schiff base ligands existed as monobasic tridentate ONO bonded to metal ion through carbonyl oxygen, azomethine nitrogen and deprotonated enolic oxygen, whereas ligand HQ existed as monobasic bidentate ON coordinating through oxygen of hydroxyl group and nitrogen of quinoline ring.  $M(L_{I-II})(Q).H_2O$  complexes were found to be non-electrolytic and monomeric in nature with octahedral or distorted octahedral geometries about metal centers. Agar plate disc diffusion method has been used for bio efficacy of compounds against various pathogenic Gram- positive bacteria viz. *Bacillus subtilis*, *Micrococcus luteus*, Gram negative bacteria viz. *Pseudomonas aeruginosa*, *Pseudomonas mendocina* and fungi *Verticillium dahlia*, *Cladosporium herbarium*, *Trichophyton soudanense* using different concentration (25, 50, 100, 200  $\mu\text{g mL}^{-1}$ ) of ligands and their complexes. Comparative study of zone of inhibition of Schiff base ligands, heterocyclic nitrogen base and their mixed ligand complexes indicated that complexes exhibit higher antimicrobial activity than the corresponding free ligands due to chelation process which reduces the polarity of metal ions.

### Graphical Abstract



Transition metal complexes

### Highlights

- Synthesis and characterization of mixed ligand tertradentate transition metal complexes.
- Evaluation for antibacterial and antifungal activity against gram positive bacteria viz. *Bacillus subtilis*, *Micrococcus luteus*, Gram negative bacteria viz. *Pseudomonas aeruginosa*, *Pseudomonas*

*mendocina* and fungi *Verticillium dahliae*, *Cladosporium herbarium*, *Trichophyton soudanense*.

- Transition metal complexes were found more active than the ligands

**Keywords:** Schiff base, Mononuclear, Bidentate, Pathogenic, Antimicrobial activity.

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