



Biological Evaluation of Cobalt, Nickel, Copper and Zinc Complexes of Thiosemicarbazones

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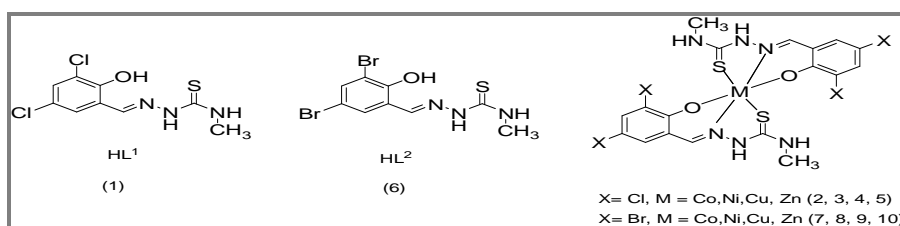
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ABSTRACT

Transition metal complexes mainly of cobalt, nickel, copper and zinc of the type $[M(L^{1-2})_2]$ were obtained from Schiff base ligands $[H(L^{1-2})]$. Ligands were synthesized from 2,5-dihalosalicylaldehyde and 4-methyl-3-thiosemicarbazide. The compounds were characterized by using various analytical techniques which suggested octahedral type of geometry for the complexes. The compounds were evaluated for *in vitro* antimicrobial activity against gram positive bacteria viz. *Streptococcus gordonii*, *Staphylococcus aureus*; gram negative bacteria viz. *Escherichia coli*, *Pseudomonas aeruginosa* and two fungal strains viz. *Candida albicans* and *Aspergillus niger*. The serial dilution method was used for the evaluation of biological activity. The data revealed that transition metal complexes were more potent than their Schiff base ligands. The complexes were more potent against fungus as compared to bacterial strains.

Graphical Abstract



Synthetic route of Schiff base ligands and their metal(II) complexes

Highlights:

- Synthesis and characterization of bidentate Schiff base transition metal complexes.
- *In vitro* antimicrobial activities at different concentrations of the compounds were carried out against gram positive bacteria viz. *Streptococcus gordonii*, *Staphylococcus aureus*; gram negative bacteria viz. *Escherichia coli*, *Pseudomonas aeruginosa* and two fungal strains viz. *Candida albicans* and *Aspergillus niger*.
- Compounds (1-10) were found to be potent against all microbial strains.
- The complexes are more noxious than parent Schiff bases.

Keywords: Biological evaluation, Fungus, Transition metals, Schiff bases.