



## New Benzothiazole-Derived Schiff base and its Co(III)/Ni(II) Ternary and Binary Complexes as Biologically Active Compounds: Synthesis, Structure and Biological Potency Investigation

B. Ajay Kumar<sup>1</sup>, Hosakere. D. Revanasiddappa<sup>1\*</sup>, B. Jayalakshmi<sup>2</sup>,  
B. Sadashivamurthy<sup>3</sup> and Shiva Prasad Kollur<sup>4</sup>

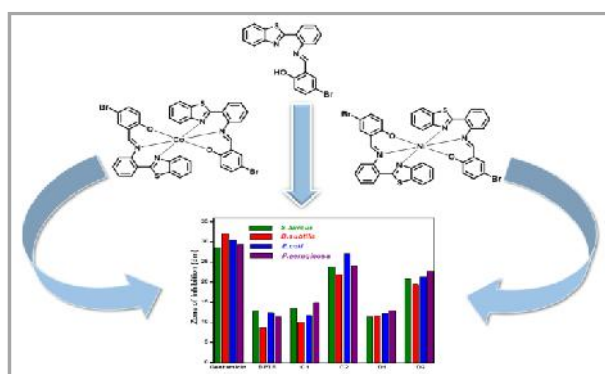
1. Department of Studies in Chemistry, Manasagangotri, University of Mysore, Mysuru-570006, Karnataka, **INDIA**
  2. Department of Botany, Government College for Women, Mandya-571 401, Karnataka, **INDIA**
  3. Department of Chemistry, Maharani's Science College for Women, JLB Road, Mysuru-570 005, Karnataka, **INDIA**
  4. School of Physical Sciences, Amrita Vishwa Vidyapeetham, Mysuru Campus, Mysuru-570 026, Karnataka, **INDIA**
- Email: [hdevanasiddappa@yshoo.com](mailto:hdevanasiddappa@yshoo.com),

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### ABSTRACT

A series of new binary and ternary transition metal complexes bearing Ni(II) and Co(III) metal ions have been designed and synthesized using 2-((E)-(2-(benzo[d]thiazol-2-yl)phenylimino)methyl)-4-bromophenol ligand (BPTB) derived from 2-(benzo[d]thiazol-2-yl)benzenamine and 5-bromo salicylaldehyde along with 1,10-Phenanthroline as co-ligand. The ligand BPTB and its metal complexes were characterized using elemental analyses, UV, NMR, FT-IR, mass spectroscopy and thermogravimetric analyses. It is interesting to note that BPTB forms octahedral geometry with metal ions through azomethine nitrogen, benzothiazole nitrogen, and phenolic oxygen which yields ternary complexes whereas the inclusion of 1,10-Phenanthroline results binary complexes as evident from the magnetic measurement and electronic spectral studies. The ligand and its complexes were tested for antimicrobial, antioxidant, anti-haemolytic, and antidiabetic studies. The studies indicate that the binary complexes are associated with enhanced biological activity as compared to ternary complexes and ligand.

### Graphical abstract:



Antibacterial screening data of the ligand and its complexes.

**Keywords:** Benzothiazole, Binary complex, Ternary complex, Biological activity.