

Rare earth transition metal-based coordination compounds of Schiff base derived from sulpha drug molecules: Synthesis, spectroscopic and *in vitro* biological screening

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In order to create novel transition metal-based coordination compounds, Schiff bases based on the sulpha drugs have been reacted with various 2-hydroxy-benzaldehyde derivatives. The antibacterial properties and spectroscopic attributes of the synthesized ligands and their heterochelates have been extensively examined. The structural characterization of the ligands has been accomplished through ¹H NMR, IR, mass spectrometry, UV-Vis spectroscopy and elemental analysis, while the heterochelates' structures have been validated using IR spectroscopy. *In vitro* evaluations have been conducted to assess the activity of the ligands and heterochelates against Gram +ve bacteria (*S. aureus*, *B. subtilis*), Gram -ve bacteria (*E. coli*, *P. aeruginosa*), and against the fungus *A. niger*. The findings underscore the promising nature of coordination compounds based on transition metals and highlight the necessity for further exploration in this field.

Keywords: Sulpha drug, Schiff base, Transition metal complexes, Antimicrobial study, Antifungal study