

## **Zinc (II) Complexes of Nitrogen, Oxygen and Sulfur Coordination Modes: Synthesis, Spectral Studies and Antibacterial Activities**

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**Abstract :** This study aimed at assessing the antibacterial activities of four zinc (II) complexes. Zinc (II) complexes of nitrogen, oxygen and sulfur coordination modes were synthesized using direct substitution reaction. The characterization techniques involved physicochemical properties (molar conductivity) and spectroscopic techniques. The molar conductivity gave the non-electrolytic nature of zinc (II) complexes. The spectral studies of zinc (II) complexes were done using electronic spectra (UV-Vis) and Fourier Transform Infra-red Spectroscopy (FT-IR). Spectral data from the spectroscopic studies confirmed the coordination of the mixed ligands with zinc (II) ion. The antibacterial activities of zinc(II) complexes were all in support of Overtone's concept and Tweedy's theory of chelation for bacterial strains of *S. aureus* MRSA252 and *E. coli* MC4100 because the zones of inhibition were greater than the corresponding ligands. In summary, all zinc (II) complexes of ZEPY, ZE1PH, ZE1PY and ZE135PY all have potentials for antibacterial activities.

**Keywords :** antibacterial activities, spectral studies, syntheses, zinc(II) complexes

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