Design, Spectroscopic, Structural Characterization, and Biological Studies for New Complexes via Charge Transfer Interaction of Ciprofloxacin Drug With π Acceptors

Authors : Khaled Alshammari

Abstract : Ciprofloxacin (CIP) is a common antibiotic drug used as a strudy electron donor that interacts with dynamic π -acceptors such as 2,3-dinitrosalsylic acid (HDNS) and Tetracyanoethylene (TCNE) for synthesizing a new model of charge transfer (CT) complexes. The synthesized complexes were identified using diverse analytical methods such as UV-vis spectra, photometric titration measurements, FT-IR, HNMR Spectroscopy, and thermogravimetric analysis techniques (TGA/DTA). The stoichiometries for all the formed complexes were found to be a 1:1 M ratio between the reactants. The characteristic spectroscopic properties such as transition dipole moment (μ), oscillator strength (f), formation constant (KCT), ionization potential (ID), standard free energy (Δ G), and energy of interaction (ECT) for the CT-complexes were collected. The developed CT complexes were tested for their toxicity on main organs, antimicrobial activity, antioxidant activity, and biofilm formation. **Keywords :** biological, biofilm, toxicity, thermal analysis, charge transfer, spectroscopy

Conference Title: ICBBB 2024: International Conference on Bioscience, Biotechnology, and Biochemistry

Conference Location : Istanbul, Türkiye

Conference Dates : April 25-26, 2024