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Design, Synthesis and Evaluation of Some New Ciprofloxacin Based Heterocyclic Compounds as Possible Antimicrobial Agents

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Abstract: The major problem encountered globally in the therapy of bacterial infections is resistance, especially in chronic infections. To overcome this obstacle which is hindering chemotherapy of bacterial infections there is a continuous thirst for newer antibiotics, with newer mechanisms of action and better pharmacokinetic profile. Ciprofloxacin is a second generation fluoroquinolone antibiotic with broad spectrum of activity against several Gram +ve and Gram –ve organisms and *M.Tuberculosis*. But in tuberculosis treatment, it is prone to resistance. Hence there is a need to develop newer ciprofloxacin analogues containing potent antitubercular heterocyclic moieties(viz.,1,3,4-oxadiazole, phthalimides etc) having different mechanisms of action with a view to overcome resistance and to improve the efficiency of quinolones. The present study is aimed to develop chimeric antibiotics containing different heterocyclic moieties onto the carbocyclic carbon at C-3 of ciprofloxacin. Molecular properties for the designed molecules were studied using different softwares(viz., Molsoft, Osiris property explorer, Lipinski filters). Synthesis of new ciprofloxacin derivatives were achieved by appropriate schemes with good yields by monitoring TLC. Recrystallization was done by suitable solvents and the pure compounds were characterized by physical and spectral analyses(IR, NMR and Mass). *In-vitro* antibacterial evaluation was done against different Gram +ve and Gram -ve microorganisms.
In this presentation design, synthesis, characterization and pharmacological evaluation of the title compounds shall be discussed.

Keywords*: Ciprofloxacin, antibiotics, resistance*

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