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Synthesis of Novel Substituted 3 -Phenyl-5-(3-phenylisoxazole-5-yl)-1, 2, 4-Oxadiazoles Catalyzed by Cu-HAP and Antimicrobial Evaluation of Biological Activity

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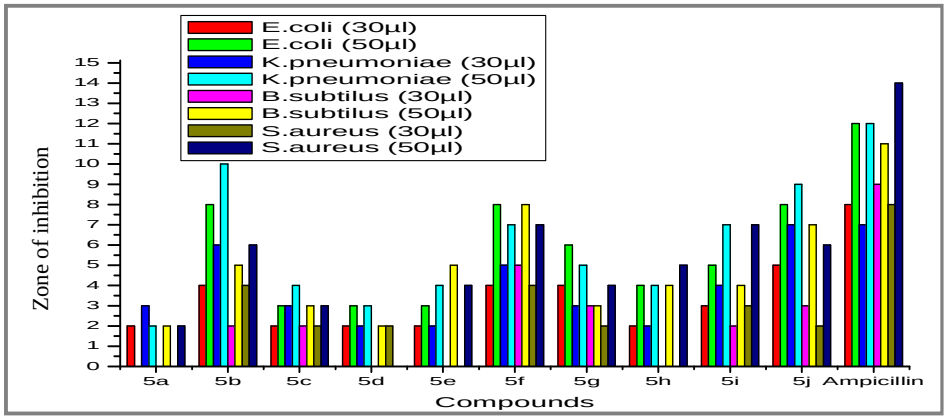
ABSTRACT

A novel approach for the synthesis of substituted 3-phenyl-5-(3-phenylisoxazole-5-yl)-1,2,4-oxadiazole ***(6a-j)*** *were synthesized by the reaction of ethyl-3-phenyl isoxazole-5-carbboxylates* ***(4a-c)*** *and amide oximes* ***(5a-g)*** *using a catalytic amount of Cu-HAP as catalyst at heating conditions in the presence of ethanol and catalytic amount of DMF media. The catalyst was quantitatively recovered from reaction mixture by simple filtration and reused for three cycles with consistence activity. All these compounds have been characterized by modern spectral techniques such as IR, ^{1}H NMR, Mass etc. Evaluation of synthesized compounds for antimicrobial activity against specific bacterial strains like 1) Escherichia coli 2) Klebsiella pneumoniae 3) Bacillus subtilis 4) Staphylococcus aureus, along with antifungal activity against 1) Aspergillus niger, 2) Aspergillus foetidus 3) Candida albicans and 4) Candida Rogosa.*

Graphical Abstract



Antibacterial activity of compounds **6a-j** against *Bacillus subtilis, Staphylococcus aureus, Escherichia coli and Klebsiella pneumonia*

Keywords: Cu-HAP, Green chemistry, 1, 2, 4-Oxadiazole, 3-Phenyl isoxazole-5-carbboxylates, Amide oximes, Antimicrobial activity.