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Design, synthesis and biological evaluation of ferrocenyl linked heterocycles as potent antimicrobial agents

Humaira Parveen

University of Tabuk, Saudi Arabia

Infectious diseases caused by bacteria and fungi have emerged as important causes of human morbidity and mortality worldwide due to their ability to thwart therapeutic regimens by rapidly evolving resistance to antimicrobial agents. Therefore, design and synthesis of newer, efficacious and safer antimicrobials remain an area of immense significance. As a part of ongoing program devoted to the search of biologically active heterocycles, twenty four novel ferrocenyl linked sulphur and nitrogen containing heterocyclic compounds have been synthesized. The structures of all compounds were well characterized by spectroscopic methods such as IR, NMR, mass and elemental analyses. All newly synthesized compounds were screened for *in vitro* antimicrobial activity against the bacterial cultures of *Staphylococcus aureus* (ATCC-25923), *Bacillus subtilis* (ATCC-6635), *Salmonella typhimurium* (ATCC - 14028), *Escherichia coli* (ATCC -25922) and fungal cultures of *Candida albicans* (ATCC-24433) and *Candida krusei* (ATCC-6528), by agar well diffusion method. The results of antimicrobial studies revealed that most of the compounds inhibited growth of bacterial as well as fungal strains. Out of 24 compounds, 16 compounds emerged as potent antimicrobials. The toxicological studies of these compounds have been studied by MTT assay on PC12-rat pheochromocytoma cell line and the results showed that all compounds were non-toxic at a concentration of 100 μ M, indicating that these compounds can act as novel leads for the development of newer yet safer antimicrobial agents with better spectrum and potency.

Biography

Humaira Parveen has completed her PhD from Aligarh Muslim University (India) and Postdoctoral studies from Jamia Millia Islamia, New Delhi (India). She also worked as a Scientist at Department of Chemistry, Jamia Millia Islamia and published a number of research articles in reputed journals. She is also serving as a reviewer of a number of journals published by Elsevier, John Wiley & Sons, Taylor and Francis Inc., De Gruyter etc.

humaira_chem@yahoo.co.in