Antimicrobial Activity of a Series of Ferrocene-Containing Pyrazolines

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Abstract:

Pyrazoline is a significant five-membered heterocyclic ring in various natural products and biologically active compounds. These heterocyclic compounds are commonly exploited in drug development due to their broad range of biological activities, including antibacterial, antimalarial, anti-inflammatory, antioxidant, neuroprotective, antidepressant, and anticancer properties. Consequently, the synthesis of pyrazolines remains a subject of significant interest for both organic and medicinal chemists. Additionally, the ferrocene unit makes a remarkable shift in the biological activities of some heterocycles, influencing their stability and reactivity. As part of our ongoing research into the development of new antimicrobial agents, herein we report the synthesis, electrochemical analysis, and spectral characterization of five compounds that combine two interesting pharmacophores: pyrazoline and ferrocene. The antimicrobial potential of ferrocene-containing pyrazolines is evaluated

against four different bacterial and fungal strains. The results indicate that these compounds exhibit slightly enhanced antifungal activity, as reflected by lower MIC values, compared to their antibacterial effects.

Keywords:

Ferrocene, Pyrazolines, Antimicrobial activity, Synthesis, Cyclic voltammetry.