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Design, synthesis and antibacterial studies 3-methlyquinoxaline-2-hydrazone derivatives

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Antibiotics have been the most effective therapeutic agents against infectious diseases caused by bacterial pathogens. However, antibiotics-resistant pathogens are increasingly prevalent, posing a serious threat to global public health. Therefore, this study aimed at determining the potency of 3-methlyquinoxaline-2-hydrazone derivatives against panel of pathogens associated with human diseases. The antibacterial potential of the synthesized compounds 2'-12' was determined using agar well diffusion method. The minimum inhibitory concentrations and minimum bactericidal concentrations of the synthesized compounds were determined along with the rate of kill. Protein leakage from cells of *Enterococcus faecalis* and *Pseudomonas fluorescence* was also determined. The synthesized compounds 2'-12' exhibited varying degree of antibacterial activity. The MIC exhibited by the synthesized compounds against susceptible Gram positive and Gram-negative bacterial isolates ranged between 0.0625 and 0.0313 mg/mL and 0.125 and 0.0625 mg/mL respectively. The time-kill assay revealed that the percentage of cells killed increased with the concentrations of the synthesized compounds as well as contact time interval. A 100% percent death of *Enterococcus faecalis* was achieved by compound 5 at 2 x MIC within 90 minutes. Varying amount of protein was leaked by the compounds from selected test isolates leading to their death. In conclusion, 3-methlyquinoxaline-2-hydrazone derivatives exhibited appreciable antimicrobial activities at low concentration and minimal contact time. The 3-methlyquinoxaline-2-hydrazone derivatives may serve as a potent antimicrobial agent to combat the development of multiple resistances by the pathogens against available antimicrobial agents.

Biography

Taiwo Festus Osho has completed his PhD from Obafemi Awolowo University, Ile-Ife, Nigeria. He is an Academic Staff in the Department of Chemistry. His research is in the Chemistry-Biology interface and is geared towards using basic synthetic chemistry tools to find solutions to the 'poor man's diseases', which are particularly endemic to Africa. He has published more than 7 papers in reputed journals.

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