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Synthesis of 3,4-Dihydro-1H-Quinoxalin-2-Ones and 1H-Quinolin-2-Ones and Evaluation of Their Anti-Bacterial Activity

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Abstract : We report here an efficient and rapid method for the preparation of 3,4-dihydro-1H-quinoxalin-2-ones and 1H-quinolin-2-ones that involves grinding of o-, m-, or p-phenylenediamine and three dialkyl acetylenedicarboxylates using a pestle and mortar. This solvent-free approach requires only a few minutes of reaction time. This type of reaction is expected to be the most economical method since neither catalyst nor solvent is used. Finally, all synthesised compounds were screened for antimicrobial activity against two Gram-positive bacteria (Pseudomonas aeruginosa PTCC 1077, Escherichia coli PTCC1330) and two Gram-negative bacteria (Staphylococcus aureus PTCC 1133, Bacillus cereus PTCC 1015) and their activity. Compared with gentamycin and ampicillin as reference drugs for Gram-negative and Gram-positive bacteria, respectively. The minimum inhibitory concentration (MIC) of the synthesised compounds and reference drugs were determined by the microdilution method. Good antibacterial activity was observed for 3,4-dihydro-1H-quinoxalin-2-ones against all species of Gram-positive and Gram-negative bacteria, and1H-quinolin-2-ones showed good antibacterial activity against two Gram-positive bacteria.

Keywords : quinolin, quinoxalin, anti-bacterial activity, minimum inhibitory concentration (MIC)
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