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Design, Synthesis and In-Vitro Antibacterial and Antifungal Activities of Some Novel Spiro[Azetidine-2, 3'-Indole]-2, 4(1'H)-Dione

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Abstract : The present study deals with the synthesis of novel spiro[azetidine-2, 3'-indole]-2', 4(1'H)-dione derivative from the reactions of 3-(phenylimino)-1,3-dihydro-2H-indol-2-one derivatives with chloracetyl chloride in presence of triethyl amine (TEA). All the compounds were characterized using IR, 1H NMR, MS and elemental analysis. They were screened for their antibacterial and antifungal activities. Results revealed that, compounds (7a), (7b), (7c), (7d) and (7e) showed very good activity with MIC value of 6.25-12.5 µg/ml against three evaluated bacterial strains and the remaining compounds showed good to moderate activity comparable to standard drugs as antibacterial agents. Compounds (7c) and (7h) displayed equipotent antifungal activity in comparison to standard drugs. Structure-activity relationship study of the compounds showed that the presence of electron withdrawing group substitution at 5' and 7' positions of indoline ring and on ortho or para position of phenyl ring increases both antibacterial and antifungal activity of the compound. Henceforth, our findings will have a good impact on chemists and biochemists for further investigations in search of bromine containing spiro fused antimicrobial agents.

Keywords : antibacterial activity, antifungal activity, 2-Azetidinone, indoline
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