Synthesis and Biological Testing of Novel Analogues of Sydnone as Potential Antibacterial Agents

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ABSTRACT
Several series of 3-phenylsydnone derivatives conjugated to well-known moieties with antibacterial activity were synthesized through several routes. These derivatives include 3-cyano-2-oxopyridine, 2-amin-3-cyanopyridine, 2-aryliden-1-ethyldenehydrazine and 2-arylidenehydrazine moieties. Thus, the key intermediate 3-(4-acetyophenyl)sydnone (3) was allowed to react with the appropriate aldehyde, ethyl cyanoacetate or malonitrile in presence of excess ammonium acetate in two steps (method 1) or through a one-pot reaction technique (methods 2 and 3) to give the corresponding sydnone derivatives 5 and 8, respectively. Moreover, condensation of compound 3 with hydrazine hydrate followed by the reaction with the appropriate aldehyde, mono- and dicarboxylic acid hydrazide yielded the corresponding sydnone derivatives 9, 9 and 10, respectively. Most of the synthesized compounds were screened for their in vitro antibacterial activity against various pathogenic organisms of both Gram-positive and Gram-negative bacteria. The minimum inhibitory concentrations (MICs) were determined using agar dilution method.

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