

Synthesis and antibacterial activities of 2-amino-benzothiazole clubbed sulphonamide derivatives

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ABSTRACT A new series of substituted 2-amino-benzothiazole coupled with sulphonamides, linked with chloroacetyl chloride to form hybrid compounds and characterized by spectral analysis, including infrared, nuclear magnetic resonance, and mass spectroscopy. The antibacterial action of the synthesized hybrids was assessed against Gram-positive (*Bacillus megaterium*, *Bacillus cereus*, and *Bacillus subtilis*) and Gram-negative (*Pseudomonas* species, including *Pseudomonas aeruginosa* and *Escherichia coli*) bacterial strains. The LibDock scores for the synthesized compounds varied from 64 to 101 kcal/mol. Compounds AV-01 A, AV-01C, and AV-02B had favorable LibDock scores, exceeding those of the reference drug, sulphonamide (64 kcal/mol). Compound AV-01C displayed a significant antibacterial response against Gram stain-positive as well as Gram stain-negative bacteria. Thus, results demonstrated that several synthesized compounds exhibited a favorable antibacterial effect, suggesting their potential for further development as effective antimicrobial agents.

KEY WORDS 2-Aminobenzothiazole, 6-Nitro 2-aminobenzothiazole, Chloroacetyl chloride, Sulphonamide, Molecular docking, Synthesis, Antibacterial activity, Health system.

How to cite this article: Verma, A., Kumar, A., Hasan, S.M., Singh, K., Suvaiv, Ahmad, I.Z., and Ahmad, A. Synthesis and antibacterial activities of 2-amino-benzothiazole clubbed sulphonamide derivatives, *Indian J. Heterocycl. Chem.*, **2025**, *35*, 635–643. <https://doi.org/10.59467/IJHC.2025.35.635>