Indian Journal of Heterocyclic Chemistry
Vol. 35 - Number 01 (Jan-Mar 2025) 37-47
https://connectjournals.com/01951.2025.35.37
https://doi.org/10.59467/IJHC.2025.35.37

ISSN (Print) : 0971-1627
ISSN (Online) : 2456-4311

Preparation and characterization of some azetidine-2-one derivatives derived from benzothiazole-2-ol and evaluation of their biological activity

Shaima H. Abdullah, Bushra A. Khairallah and Khalid A. Al-Badrany*
Department of Chemistry, Tikrit University/College of Education for Pure Science, Tikrit, Iraq

ABSTRACT This study involves the use of hydrazones derived from 2-hydroxybenzothiazole as nucleophiles to prepare several heterocyclic azetidine derivatives by reacting the prepared hydrazone with chloroacetyl chloride. Dioxane was used as a solvent, and triethylamine was used as a catalyst. In addition to determining the melting point, the structures of the prepared compounds were confirmed by physical and spectroscopic methods, infrared, proton, and carbon nuclear magnetic resonance (^{1}H and ^{13}C-NMR) spectroscopy, and thin layer chromatography to track the reaction progress. The biological viability was evaluated using two bacterial isolates known to be resistant to antibiotics: *Acinetobacter baumannii* (Gram-ve) and *Staphylococcus acidophilus* (Gram+ve) and compared with the control antibiotic amoxicillin, which showed good inhibitory activity against both types of bacteria used, with high efficiency and selectivity.

KEYWORDS Azetidine-2-one, Benzothiazole-2-ol, Biological activity heterocyclic, Hydrazone.

How to cite this article: Abdullah, S.H., Khairallah, B.A. and Al-Badrany, K.A. Preparation and characterization of some azetidine-2-one derivatives derived from benzothiazole-2-ol and evaluation of their biological activity, *Indian J. Heterocycl. Chem.*, **2025**, *35*, 37–47. *https://doi.org/10.59467/IJHC.2025.35.37*