Indian Journal of Chemistry
Vol. 65, April 2026, pp. 383-395
DOI: 10.56042/ijc.v65i4.29408

Synthesis, spectral characterization, molecular docking studies, and antimicrobial activity of isoxazolo[5,4-*b*]pyrazolo[4,3-*e*]pyridine derivatives containing benzyl 1,2,3-triazole moiety

R Sanjeev*, P V Dongarkadekar & Mahesh Bapurao Swami
Department of Chemistry, Bahirji Smarak Mahavidyalaya, Basmathnager, Hingoli, Nanded 431 512, India
Swami Ramanand Teerth Marathwada University, Nanded 431 513, India
E-mail: sanjeev.rella@gmail.com

Received 5 March 2026; accepted (revised) 2 April 2026

A molecular hybridization strategy has been employed to synthesize 7[(1-benzyl-1*H*-1,2,3-triazol-4-yl)methyl]-3-methyl-4-aryl-7*H*-isoxazolo[5,4-*b*]pyrazolo[4,3-*e*]pyridine-5-amines, **6** by incorporating pyrazolo-pyridine on isoxazole nucleus with 1,2,3-triazole fragment on pyrazole nitrogen as potential antimicrobial agents. The structures of the newly synthesized compounds have been confirmed by IR, NMR, and mass spectrometry. The compounds **6a-h** screened for their *in vitro* antimicrobial activity show promising activity compared to the standard drugs. Especially, compounds **6g** and **6h** exhibit high antibacterial and antifungal activity with respect to standard drugs *Ciprofloxacin* and *Fluconazole* respectively. Furthermore, molecular docking analysis also supports the data of antimicrobial activity by revealing high binding affinity scores across the entire series.

Keywords: One-pot multi-component synthesis, Isoxazolo[5,4-*b*]pyrazolo[4,3-*e*]-pyridines, 1,2,3-Triazole, Molecular docking studies, *In vitro* antimicrobial activity, Potential antimicrobial activity

The increasing