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(57) Abstract :
The present invention relates to a phenothiazine-based piperazine ethanone derivative, namely 1-(10H-phenothiazin-10-yl)-2-(4-((m-tolylamino)methyl)piperazin-1-yl)ethanone, a process for preparation thereof, and antibacterial compositions comprising the same. The process comprises reacting 1-(10H-phenothiazin-10-yl)-2-(piperazin-1-yl)ethanone with 3-methylaniline and formaldehyde in ethanol under reflux, followed by precipitation, filtration, and recrystallization to obtain the target compound. The synthesized compound is characterized by infrared and proton nuclear magnetic resonance spectroscopy and exhibits favorable in silico physicochemical and pharmacokinetic attributes. The compound further demonstrates antibacterial activity against representative Gram-positive and Gram-negative bacterial strains. The invention accordingly provides a structurally defined antibacterial scaffold, a reproducible preparation process, and compositions useful for antibacterial inhibition in laboratory, industrial, and formulation-development settings. Accompanied Drawing [FIGS. 1-2]

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