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(57) Abstract :
ABSTRACT SYNTHETIC STRATEGIES: METHODS FOR PRODUCING PYRIMIDINE AS ANTI-TUBERCULAR AGENT The present invention discloses a novel synthetic molecule, 4-(4-(1H-pyrrol-1-yl) phenyl)-6-(4-methoxy phenyl) pyrimidin-2-amine, and a method for its preparation. The compound has been designed and synthesized using organic chemistry principles, with the key steps involving the synthesis of a pyrrole intermediate and its subsequent reaction to form the final pyrimidine derivative. The synthesized compound has demonstrated potent in vitro anti-tubercular activity, exhibiting a minimum inhibitory concentration (MIC) of 0.78 µg/mL against Mycobacterium tuberculosis, which is significantly lower than the MIC values of standard anti-TB drugs. Additionally, the compound has shown a favorable safety profile, with an IC50 value of 104.77 µM against the A549 (lung adenocarcinoma) cell line. The advantages of the disclosed compound, including its improved anti-tubercular potency, novel structural features, and potential mechanisms of action targeting key enzymes in Mycobacterium tuberculosis, make it a promising candidate for further optimization and development as a new anti-tuberculosis therapeutic. FIG 1

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