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Design, Synthesis, and Antitubercular Evaluation of a Trifluoromethyl-Substituted Cycloheptane-1,3-dione Derivative against *Mycobacterium tuberculosis* H37Rv

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SUMMARY. The present study reports the synthesis and anti-tuberculosis evaluation of 2-((2-hydroxy-4-(trifluoromethyl)phenylamino)methylene)cycloheptane-1,3-dione against *Mycobacterium tuberculosis* (H37Rv). The compound was obtained through a condensation reaction involving cycloheptane-1,3-dione, 2-hydroxy-4-trifluoromethyl aniline, and triethyl orthoformate. The reaction led to the formation of the desired product in descent yield as revealed by the ^{1}H and ^{13}C NMR spectral techniques. Biological assays revealed significant growth inhibition of *M. tuberculosis* H37Rv, with a minimum inhibitory concentration (MIC) of 1.25 μg/mL in a dose-dependent manner. These findings demonstrate a simple synthetic strategy for this derivative and highlight its potential as a promising candidate for tuberculosis therapy due to its potent inhibitory activity.

RESUMEN. El presente estudio informa sobre la síntesis y evaluación antituberculosa de 2-((2-hidroxi-4-(trifluorometil)fenilamino)metilen)cicloheptano-1,3-diona contra *Mycobacterium tuberculosis* (H37Rv). El compuesto se obtuvo mediante una reacción de condensación que involucró cicloheptano-1,3-diona, 2-hidroxi-4-trifluorometil anilina y ortoformiato de trietilo. La reacción condujo a la formación del producto deseado con un rendimiento decreciente, como se reveló mediante técnicas espectrales de RMN de 1H y 13C. Los ensayos biológicos revelaron una inhibición significativa del crecimiento de *M. tuberculosis* H37Rv, con una concentración mínima inhibitoria (CMI) de 1,25 μg/mL, dependiente de la dosis. Estos hallazgos demuestran una estrategia sintética simple para este derivado y destacan su potencial como candidato prometedor para el tratamiento de la tuberculosis debido a su potente actividad inhibitoria.

KEYWORDS: diones, drug resistant TB, MIC, SAR, tuberculosis treatment,

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