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Synthesis and *In Vitro* Antimycobacterial Evaluation of *N*-arylidene-5-aryl-1,3,4-oxadiazol-2-amines Derivatives

Amirah ALBAQAMI [1], Wedad MAWKILI [2], Abdullah Y.A. ALZAHRANI [3] & Mohammad ASIF [4] *

[1] *Department of Clinical Laboratory Sciences, Turabah University College, Taif University, Taif, 21944, Saudi Arabia*

[2] *Department of Pharmacology and Toxicology, College of Pharmacy, Jazan University, Jazan 45142, Saudi Arabia*

[3] *Department of Chemistry, Faculty of Science and Arts, King Khalid University, Mohail Assir, Saudi Arabia*

[4] *Department of Pharmaceutical Chemistry, Era College of Pharmacy, Era University, Lucknow, 226003, Uttar Pradesh, India*

SUMMARY. A series of *N*-arylidene-5-aryl-1,3,4-oxadiazol-2-amines (**2a-d**, **3a-d**, and **4a-d**) were synthesized with the help of aryl acids, semicarbazide, and arylbenzaldehyde. These synthesized compounds were characterized by elemental analysis, FT-IR, ^{1}HNMR, and mass spectral data analysis. The title compounds were evaluated as *in-vitro* antimycobacterial agents against *Mycobacterium tuberculosis* H37RV by using Microplate Alamar Blue Dye Assay (MABA) method. The *in vitro* antimycobacterial result exhibited that the most active compounds (**2c**, **2d**, **3c**, **3d**, **4c**, and **4d**) showed a minimum inhibitory concentration (MIC) value of 6.25 μg/mL when compared with standard drugs ciprofloxacin, pyrazinamide (3.125μg/mL), and streptomycin (6.25 μg/mL). Most of the title compounds were exhibited MIC value ranging (6.25-12.5 μg/mL). Compound **3a** was found least effective compound. Electron withdrawing group (Cl & NO_2) on the phenyl ring is more effective than electron releasing groups (OH). All the synthesized compounds will encourage us to progress and improve other novel compounds for their effective antimycobacterial potential.

RESUMEN. Se sintetizaron una serie de N-ariliden-5-aril-1,3,4-oxadiazol-2-aminas (**2a-d**, **3a-d** y **4a-d**) con la ayuda de ácidos arílicos, semicarbazida y arilbenzaldehído. Estos compuestos sintetizados se caracterizaron mediante análisis elemental, FT-IR, 1HNMR y análisis de datos espectrales de masas. Los compuestos del título se evaluaron como agentes antimicobacterianos *in vitro* contra *Mycobacterium tuberculosis* H37RV utilizando el método Microplate Alamar Blue Dye Assay (MABA). El resultado antimicobacteriano in vitro mostró que los compuestos más activos (**2c**, **2d**, **3c**, **3d**, **4c** y **4d**) mostraron un valor de concentración mínima inhibitoria (CMI) de 6,25 μg/mL en comparación con los fármacos estándar ciprofloxacina, pirazinamida (3,125 μg /mL) y estreptomicina (6,25 μg/mL). La mayoría de los compuestos del título exhibieron valores de CIM en el rango (6,25-12,5 μg/mL). Se encontró que el compuesto **3a** era el compuesto menos eficaz. El grupo aceptor de electrones (Cl y NO2) en el anillo de fenilo es más efectivo que los grupos liberadores de electrones (OH). Todos los compuestos sintetizados nos animarán a progresar y mejorar otros compuestos novedosos por su eficaz potencial antimicobacteriano.

KEYWORDS: antimycobacterial activity, heterocyclic, MABA method, *Mycobacterium tuberculosis*, 1,3,4-oxadiazole, spectra data, synthesis,.

* Author to whom correspondence should be addressed. *E-mail:* aasif321@gmail.com

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