Latin American Journal of Pharmacy
(formerly *Acta Farmacéutica Bonaerense*)
Lat. Am. J. Pharm. **43** (10): 2134-7 (2024)

Received: May 30, 2024
Accepted: June 18, 2024

Synthesis, and *In Vitro* Antibacterial Activity of some Isoniazid Analogs Containing Heterocyclic Moiety in their Structures

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SUMMARY. Several isoniazid analogs (1-4) with heterocyclic moiety have been synthesized in the current investigation. These substances contain many heterocyclic moiety types, including phthalazine, pyridazine, and pyrazol. These compounds' structures were verified by elemental analysis, FT-IR, 1H-NMR, and spectrum data. Using the well diffusion method, all synthesized compounds were evaluated for their *in-vitro* antimicrobial activity against the both types of Gram-positive *(Pseudomonas aeruginosa* and *Escherichia coli)* as well as Gram-negative bacteria *(Bacillus subtilis* and *Staphylococcus aureus)* pathogenic strain. The outcomes demonstrated that these substances had detectable antibacterial action.

RESUMEN. En la investigación actual se han sintetizado varios análogos de isoniazida (1-4) con un resto heterocíclico. Estas sustancias contienen muchos tipos de restos heterocíclicos, incluidos ftalazina, piridazina y pirazol. Las estructuras de estos compuestos se verificaron mediante análisis elemental, FT-IR, 1H-NMR y datos de espectro. Utilizando el método de difusión de pozo, se evaluó la actividad antimicrobiana in vitro de todos los compuestos sintetizados contra ambos tipos de cepas patógenas Gram-positivas (*Pseudomonas aeruginosa* y *Escherichia coli*) y Gram-negativas (*Bacillus subtilis* y *Staphylococcus aureus*). Los resultados demostraron que estas sustancias tenían una acción antibacteriana detectable.

KEYWORDS: antimicrobial agents, isoniazid, phthalazine, pyrazole, pyridazine.

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ISSN 0326 2383 (printed ed.)
ISSN 2362-3853 (on line ed.)