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SYNTHESIS, CHARACTERIZATION, AND ANTIMYCOBACTERIAL ACTIVITY OF SOME NEW PYRIDINYL PYRIDAZINE DERIVATIVES

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Abstract. Some new pyridazine compounds were synthesized, characterized, and evaluated for their *in vitro* antimycobacterial activity against *Mycobacterium tuberculosis* by microplate Alamar blue dye assay (MABA) method. Isonicotinohydrazide was condensed with appropriate heterocyclic aldehydes to formed compounds N-(heteroaryl-2-ylmethylene)-isonicotinohydrazides. Intramolecular cyclization of compound N-(heteroaryl-2-ylmethylene)-isonicotinohydrazide to formed 4-(pyridine-4-yl)furo[2,3-d]pyridazine,4-(pyridine-4-yl)-1H-pyrrolo [2,3-d]pyridazine and 4-(pyridine-4-yl)thieno[2,3-d]pyridazine respectively. All synthesized compounds were characterized by using IR, NMR, and mass spectra data. Docking study, optimized geometries, electrical and optical parameters were also studied in a solvent phase of synthesized pyridazine derivatives. Compound 4-(pyridine-4-yl)thieno[2,3-d]pyridazine was found (12.5 μg/mL) to have the most significant antimycobacterial activity when compared to reference drugs streptomycin (6.25 μg/mL) and pyrazinamide (3.125 μg/mL).

Keywords: pyridazine derivative, antimycobacterial activity, tuberculosis, synthesis, spectral characterization.