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Synthesis and Characterization of Methyl-2-hydroxy-5-{(1)-1-[2-(pyridin-4-ylcarbonyl) hydrazinylidene]butyl}benzoate, a New Isonicotinoylhydrazone Derivative of Methyl Salicylate

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Abstract: One of the challenges faced by physicians in curing Tuberculosis (TB) is the presence of resistant strains of the bacteria towards the first-line of drugs (Isoniazid, Rifampicin, Pyrazinamide and Ethambutol) used to treat the disease. This has been a result of poor patient compliance to treatment regimens, enabling the bacteria to develop resistance towards these drugs. The derivatization of the first-line of drugs has been the subject of current researches as one of the strategies to combat the existence of resistant strains of the bacteria. Isonicotinoylhydrazones, are a class of isoniazid derivaties with potential anti-tuberculosis (TB) activity. This study deals with the synthesis and characterization of an Isonicotinoylhydrazone derivative, methyl 2-hydroxy-5-{(1)-1-[2-(pyridin-4-ylcarbonyl)hydrazinylidene]butyl}benzoate (1c). The synthesis involves the use Friedel-Crafts acylation of methyl salicylate with butanoyl chloride followed by the imine formation with Isoniazid. The target compound (1c) was generated as a dirty white powder in 75.98% yield. Characterization of the compound involved the use of mass spectrometry, infrared spectroscopy and its structure was confirmed through ^{1}H-NMR analysis. The synthesized compound may exhibit similar or higher anti-tubercular activity against susceptible and resistant strains of *Mycobacterium tuberculosis* towards INH. It may also be used as part of a structure activity relationship study on a set of previously synthesized Isonicotinoylhydrazones with varying alkyl chains.

Key Words: Isonicotinoylhydrazones, Isoniazid, Tuberculosis, Friedel-Crafts acylation, Methyl salicylate