

## Synthesis of acetylisoniazid and validation of the detection method by HPLC

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**Abstract.** The work presented aims to synthesize acetyl isoniazid (AcINH) chemically by acetylation of Isoniazid (INH). The latter is a medicine against any type of tuberculosis and the synthesized molecule is the metabolite of this drug in the body. To achieve this, an optimization of the synthesis of acetyl isoniazid is necessary, by carrying out several methods of synthesis and modifying several parameters, which are: the volume ratio between acetic anhydride and pyridine, the evaporation's temperature of our mixture, and the purification of our synthesis.

The characterization of this reaction product will be by: UV, GC / MS, TLC, and HPLC / DAD was carried out while optimizing the operating conditions.

Finally, quantification of the drug and its synthesized metabolite was performed using high performance liquid chromatography. Calibration curves were carried out successfully. The application of the validation is carried out and a study of the stability of the two molecules has also been carried out.

The results obtained show that the synthesis of acetylisoniazid has taken place. Indeed, an identification of this molecule is carried out using its mass spectrum obtained by GC / MS. Optimal conditions for the synthesis and characterization of this molecule have also been established.

**Key words :** Isoniazid, acetylisoniazid, Characterization, Validation.