

Product Data Sheet

Product Name: Isoniazid
Cat. No.: GC12017

Chemical Properties

Cas. No. 54-85-3

Chemical Name pyridine-4-carbohydrazide

SMILES C1=CN=CC=C1C(=O)NN

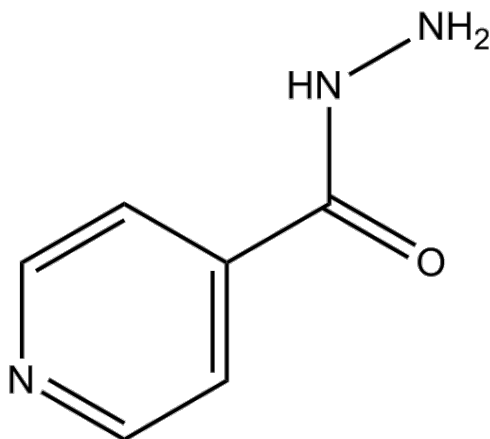
Formula C6H7N3O M.Wt 137.14

Solubility DMF: 0.5 mg/mL, DMSO: 1 mg/mL, Ethanol: 0.30 mg/mL, PBS (pH 7.2): 1 mg/mL
Storage 4°C, protect from light

General tips For obtaining a higher solubility, please warm the tube at 37 °C and shake it in the ultrasonic bath for a while. Stock solution can be stored below -20°C for several months.

Shipping Condition Evaluation sample solution: ship with blue ice. All other available size: ship with RT, or blue ice upon request.

Structure



Background

Isoniazid is an antibacterial agent used primarily as a tuberculostatic. Target: Antibacterial. Isoniazid is a prodrug and must be activated by a bacterial catalase-peroxidase enzyme that in *M. tuberculosis* is called KatG [1]. KatG couples the isonicotinic acyl with NADH to form isonicotinic acyl-NADH.

Caution: Product has not been fully validated for medical applications. For research use only.

Tel: (909) 407-4943 Fax: (626) 353-8530 E-mail: tech@glpbio.com

Address: 10292 Central Ave. #205, Montclair, CA, USA

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complex. This complex binds tightly to the enoyl-acyl carrier protein reductase known as InhA, thereby blocking the natural enoyl-AcpM substrate and the action of fatty acid synthase. This process inhibits the synthesis of mycolic acid, required for the mycobacterial cell wall. A range of radicals are produced by KatG activation of isoniazid, including nitric oxide, which has also been shown to be important in the action of another antimycobacterial prodrug PA-824 [2, 3]. Isoniazid is bactericidal to rapidly dividing mycobacteria, but is bacteriostatic if the mycobacteria are slow-growing [4].

References:

- [1]. Suarez, J., et al., An oxyferrous heme/protein-based radical intermediate is catalytically competent in the catalase reaction of Mycobacterium tuberculosis catalase-peroxidase (KatG). J Biol Chem, 2009. 284(11): p. 7017-29.
- [2]. Timmins, G.S., et al., Nitric oxide generated from isoniazid activation by KatG: source of nitric oxide and activity against Mycobacterium tuberculosis. Antimicrob Agents Chemother, 2004. 48(8): p. 3006-9.
- [3]. Singh, R., et al., PA-824 kills nonreplicating Mycobacterium tuberculosis by intracellular NO release. Science, 2008. 322(5906): p. 1392-5.
- [4]. Ahmad, Z., et al., Biphasic kill curve of isoniazid reveals the presence of drug-tolerant, not drug-resistant, Mycobacterium tuberculosis in the guinea pig. J Infect Dis, 2009. 200(7): p. 1136-43.

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