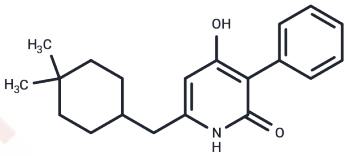
Data Sheet (Cat.No.T60774)

TargetMol

NITD-916

Chemical Properties



CAS No. : 1614262-83-7

Formula: C20H25NO2

Molecular Weight: 311.42

Storage: Powder: -20°C for 3 years | In solvent: -80°C for 1 year
Actual storage temperature shall be subject to the COA.

Biological Description

Description	NITD-916, a 4-hydroxy-2-pyridone derivative, is a mycobacterial enoyl reductase InhA inhibitor (IC50=570 nM) with oral activity and high lipophilicity. Capable of forming a ternary complex with InhA and NADH, blocking fatty acyl substrate binding and inhibiting mycolic acid synthesis, thereby exerting potent anti-tuberculosis effects.
Targets(IC50)	Antibacterial,Antibiotic
In vitro	**Methods**: The broth microdilution method was used to detect the in vitro activity of NITD-916, with Mycobacterium abscessus standard strains and clinical isolates as test organisms, incubated in CaMHB medium at 30°C for 3–5 days, at concentrations of 1.25 ×, 10×, and 20× MIC; meanwhile, intracellular bactericidal experiments were performed using THP-1 macrophages with an MOI of 2:1, incubated for 1–3 days. **Results**: NITD-916 showed low MIC against both smooth and rough type strains, and 10× MIC significantly reduced intracellular bacterial load. [1] **Methods**: The nutrient starvation model was used to detect the in vitro activity of NITD-916, with Mycobacterium tuberculosis H37Rv as the test organism. Non-replicating bacteria were prepared by starvation culture in PBS for 2 weeks, then NITD-916 (0.14–0.58 μM) was added with a final DMSO concentration of 2%, and continuously incubated for 21 days. CFU was determined by plate counting method. **Results**: NITD-916 showed time-dependent bactericidal activity, reducing viable bacterial counts by more than 3 log units within 21 days, with no drug-resistant mutant strains growing. [2]
In vivo	**Methods**: An acute pulmonary infection mouse model was used, in which 6-week-old male BALB/c mice were infected intranasally with Mycobacterium abscessus and treated with NITD-916 (100 mg/kg) dissolved in microemulsion preconcentrate by daily oral gavage for 14 consecutive days; control groups received rifabutin, clarithromycin, or blank vehicle. **Results**: NITD-916 reduced pulmonary bacterial load by 5.6 $\log_{10}$ CFU in mice, with significant improvement in lung lesions and inflammation, showing superior efficacy to clarithromycin and comparable efficacy to rifabutin. [3] **Methods**: A Mycobacterium tuberculosis-infected mouse model was used to validate the in vivo activity of NITD-916. Drug was administered via oral route in both acute and chronic infection models, with dose and treatment duration following conventional anti-tuberculosis regimens, and vehicle meeting preclinical dosing standards. **Results**: NITD-916 demonstrated in vivo efficacy comparable to isoniazid, effectively

In vivo	reducing pulmonary bacterial load, with significantly lower resistance incidence than isoniazid, and showed good safety and tolerability. [4]

Solubility Information

Solubility	DMSO: 15 mg/mL (48.17 mM),Sonication is recommended. (< 1 mg/ml refers to the product slightly soluble or insoluble)

Preparing Stock Solutions

	1mg	5mg	10mg
1 mM	3.2111 mL	16.0555 mL	32.111 mL
5 mM	0.6422 mL	3.2111 mL	6.4222 mL
10 mM	0.3211 mL	1.6055 mL	3.2111 mL
50 mM	0.0642 mL	0.3211 mL	0.6422 mL

Please select the appropriate solvent to prepare the stock solution, according to the solubility of the product in different solvents. Please use it as soon as possible.

Note: The dilution table applies only to solid products. For liquid products, please calculate the stock solution based on the stated concentration and/or density.

Reference

Alcaraz, Matthéo et al. Efficacy and Mode of Action of a Direct Inhibitor of Mycobacterium abscessus InhA. ACS infectious diseases vol. 8,10 (2022): 2171-2186.

Flint, Lindsay et al. InhA inhibitors have activity against non-replicating Mycobacterium tuberculosis. PloS one vol. 15,11 e0239354. 17 Nov. 2020.

Jia, Yaping et al. An enoyl-ACP reductase inhibitor, NITD-916, expresses anti-Mycobacterium abscessus activity. Antimicrobial agents and chemotherapy vol. 69,7 (2025): e0024925.

McNeil, Matthew B et al. Mechanisms of resistance against NITD-916, a direct inhibitor of Mycobacterium tuberculosis InhA. Tuberculosis (Edinburgh, Scotland) vol. 107 (2017): 133-136. doi:10.