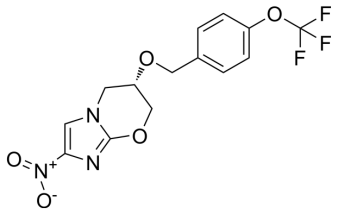
Pretomanid

Cat. No.:	HY-10844
CAS No.:	187235-37-6
Molecular Formula:	$C_{14}H_{12}F_3N_3O_5$
Molecular Weight:	359.26
Target:	Bacterial; Antibiotic
Pathway:	Anti-infection
Storage:	Powder -20°C 3 years 4°C 2 years In solvent -80°C 1 year -20°C 6 months



SOLVENT & SOLUBILITY

In Vitro

DMSO : 125 mg/mL (347.94 mM; Need ultrasonic)

Preparing Stock Solutions

Solvent / Mass / Concentration	1 mg	5 mg	10 mg
1 mM	2.7835 mL	13.9175 mL	27.8350 mL
5 mM	0.5567 mL	2.7835 mL	5.5670 mL
10 mM	0.2783 mL	1.3917 mL	2.7835 mL

Please refer to the solubility information to select the appropriate solvent.

In Vivo

1. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: 2.08 mg/mL (5.79 mM); Clear solution; Need ultrasonic
2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: 2.08 mg/mL (5.79 mM); Suspended solution; Need ultrasonic
3. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: 2.08 mg/mL (5.79 mM); Clear solution; Need ultrasonic

BIOLOGICAL ACTIVITY

Description

Pretomanid (PA-824) is an antibiotic used for the research of multi-drug-resistant tuberculosis affecting the lungs. Pretomanid exhibits a sub-micromolar MIC against M. tuberculosis (MTB). The MIC values of PA-824 against a panel of MTB pan-sensitive and Rifampin mono-resistant clinical isolates range from 0.015 to 0.25 μg/mL.

IC_{50} & Target

Tuberculosis.

In Vitro

Pretomanid (PA-824) exhibited a sub-micromolar minimal inhibitory concentration (MIC) against MTB, Although Pretomanid

(PA-824) was not the most potent NAP against cultured MTB clinical isolates, it was the most active in infected mice when orally administered at 25 mg/kg. This indicated that Pretomanid (PA-824) might possess more desirable pharmacokinetic properties than the other more potent NAP compounds that we tested. Further studies in mice at 25, 50 and 100 mg/kg Pretomanid (PA-824) daily for 10 days resulted in reductions of mycobacterial burden in both spleen and lung tissues that were comparable to that of INH at 25 mg/kg[1]. Pretomanid (PA-824) showed significant activity at 2, 10, and 50 microg/ml, similar to that of metronidazole, in a dose-dependent manner. Pretomanid (PA-824) at 100 mg/kg in cyclodextrin/lecithin was as active as moxifloxacin at 100 mg/kg and isoniazid at 25 mg/kg and was slightly more active than rifampin at 20 mg/kg. Long-term treatment with Pretomanid (PA-824) at 100 mg/kg in cyclodextrin/lecithin reduced the bacterial load below 500 CFU in the lungs and spleen[2]. Pretomanid (PA-824) has no effect on the viability of M. leprae in all three models, consistent with the lack of the nitroimidazo-oxazine-specific nitroreductase, encoded by Rv3547 in the M. leprae genome, which is essential for activation of this molecule[3].

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

CUSTOMER VALIDATION

- Int J Pharm. 2024 Feb 21:653:123920.
- ACS Infect Dis. 2020 Dec 15.
- Dis Model Mech. 2021 Oct 13;dmm.049145.

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REFERENCES

[1]. Stover CK, et al. A small-molecule nitroimidazopyran drug candidate for the treatment of tuberculosis. Nature. 2000 Jun 22;405(6789):962-6.

[2]. Lenaerts AJ, et al. Preclinical testing of the nitroimidazopyran PA-824 for activity against Mycobacterium tuberculosis in a series of in vitro and in vivo models. Antimicrob Agents Chemother. 2005 Jun;49(6):2294-301.

[3]. Manjunatha UH, et al. Mycobacterium leprae is naturally resistant to PA-824. Antimicrob Agents Chemother. 2006 Oct;50(10):3350-4.

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

Tel: 609-228-6898 Fax: 609-228-5909 E-mail: tech@MedChemExpress.com

Address: 1 Deer Park Dr, Suite Q, Monmouth Junction, NJ 08852, USA