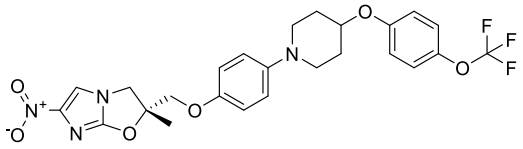
Product data sheet

MedKoo Cat#: 319510 Name: Delamanid (OPC-67683) CAS#: 681492-22-8 Chemical Formula: $C_{25}H_{25}F_3N_4O_6$ Exact Mass: 534.17262 Molecular Weight: 534.49221	
Product supplied as:	Powder
Purity (by HPLC):	≥ 98%
Shipping conditions	Ambient temperature
Storage conditions:	Powder: -20°C 3 years; 4°C 2 years.
	In solvent: -80°C 3 months; -20°C 2 weeks.

1. Product description:
Delamanid, also known as OPC-67683, is a drug for the treatment of multi-drug-resistant tuberculosis. It works by blocking the synthesis of mycolic acids in Mycobacterium tuberculosis, the organism which causes tuberculosis, thus destabilising its cell wall. The drug is approved in the EU. Delamanid inhibits the synthesis of mycolic acids, crucial component of the cell wall of the Mycobacterium tuberculosis complex. Delamanid is insoluble in water and its activity was proven in several in vitro and in vivo studies. Its bactericidal activity was demonstrated in individuals with drug-susceptible and drug-resistant tuberculosis (MDR- and XDR-TB).

2. CoA, QC data, SDS, and handling instruction
SDS and handling instruction, CoA with copies of QC data (NMR, HPLC and MS analytical spectra) can be downloaded from the product web page under "QC And Documents" section. Note: copies of analytical spectra may not be available if the product is being supplied by MedKoo partners. Whether the product was made by MedKoo or provided by its partners, the quality is 100% guaranteed.

3. Solubility data

Solvent	Max Conc. mg/mL	Max Conc. mM
DMSO	56.67	106.03
DMF	25.0	46.77
Ethanol	2.0	3.68

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	1.87 mL	9.35 mL	18.71 mL
5 mM	0.37 mL	1.87 mL	3.74 mL
10 mM	0.19 mL	0.94 mL	1.87 mL
50 mM	0.04 mL	0.19 mL	0.37 mL

5. Molarity Calculator, Reconstitution Calculator, Dilution Calculator
Please refer the product web page under section of "Calculator"

6. Recommended literature which reported protocols for in vitro and in vivo study
In vitro study

1. Sasabe H, Shimokawa Y, Shibata M, Hashizume K, Hamasako Y, Ohzone Y, Kashiyama E, Umehara K. Antitubercular Agent Delamanid and Metabolites as Substrates and Inhibitors of ABC and Solute Carrier Transporters. Antimicrob Agents Chemother. 2016 May 23;60(6):3497-508. doi: 10.1128/AAC.03049-15. Erratum in: Antimicrob Agents Chemother. 2016 Jul;60(7):4431. PMID: 27021329; PMCID: PMC4879383.
2. Matsumoto M, Hashizume H, Tomishige T, Kawasaki M, Tsubouchi H, Sasaki H, Shimokawa Y, Komatsu M. OPC-67683, a nitro-dihydro-imidazooxazole derivative with promising action against tuberculosis in vitro and in mice. PLoS Med. 2006 Nov;3(11):e466. doi: 10.1371/journal.pmed.0030466. PMID: 17132069; PMCID: PMC1664607.

In vivo study

Product data sheet

1. Chen X, Hashizume H, Tomishige T, Nakamura I, Matsuba M, Fujiwara M, Kitamoto R, Hanaki E, Ohba Y, Matsumoto M. Delamanid Kills Dormant Mycobacteria In Vitro and in a Guinea Pig Model of Tuberculosis. Antimicrob Agents Chemother. 2017 May 24;61(6):e02402-16. doi: 10.1128/AAC.02402-16. PMID: 28373190; PMCID: PMC5444171.
2. Patterson S, Wyllie S, Norval S, Stojanovski L, Simeons FR, Auer JL, Osuna-Cabello M, Read KD, Fairlamb AH. The anti-tubercular drug delamanid as a potential oral treatment for visceral leishmaniasis. Elife. 2016 May 24;5:e09744. doi: 10.7554/eLife.09744. PMID: 27215734; PMCID: PMC4878867.

7. Bioactivity

Biological target:

Delamanid, a newer mycobacterial cell wall synthesis inhibitor, inhibits the synthesisi of mucolic acids.

In vitro activity

A study was conducted to confirm the post-antibiotic effect of OPC-67683 on intracellular M. tuberculosis in THP-1 cells, and the results were compared with RFP, INH, and PA-824. OPC-67683 was shown to be highly active against intracellular M. tuberculosis H37Rv after 4-h pulsed exposures in a dose-dependent manner. The data are shown in Figure 3. The intracellular activity of OPC-67683 at a concentration of 0.1 μg/ml was similar to that of RFP of 3 μg/ml, but was superior to INH and PA-824, which both showed poor activity during the 4-h pulsed exposure. These results indicated that even with limited contact with the bacteria within the cells, OPC-67683 might be able to effectively kill the intracellular mycobacteria.

Reference: PLoS Med. 2006 Nov; 3(11): e466. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1664607/

In vivo activity

Regimen D (DLM (Delamanid) alone at 100 mg/kg) eradicated lung CFU over time (2.04 log10 CFU at 4 weeks, 0 log10 CFU at 8 weeks), equivalent to the results with the LVX-ETO-PZA-AMK (LEtZA) regimen and the standard RIF-INH-PZA (RHZ) regimen (Fig. 2 and Table 2). Replacing INH with 100 mg/kg DLM in the RHZ regimen or adding 100 mg/kg DLM to the LEtZA regimen significantly accelerated eradication of bacilli, as lungs from guinea pigs treated with the DLM-RIF-PZA (DRZ) or DLM-LVX-ETO-PZA-AMK (DLEtZA) regimen resulted in no viable bacteria being detected at 4 weeks. These results indicate that DLM plays an important role in the eradication of M. tuberculosis in guinea pig lungs.

Reference: Antimicrob Agents Chemother. 2017 Jun; 61(6): e02402-16. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5444171/