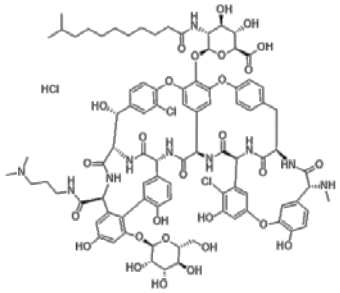
Product data sheet

MedKoo Cat#: 317136 Name: Dalbavancin HCl CAS#: Unknown Chemical Formula: $C_{88}H_{101}Cl_3N_{10}O_{28}$ Molecular Weight: 1853.17	
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:

Dalbavancin is a novel second-generation lipoglycopeptide antibiotic. It belongs to the same class as vancomycin, the most widely used and one of the few treatments available to patients infected with methicillin-resistant Staphylococcus aureus (MRSA). Dalbavancin is a semisynthetic lipoglycopeptide that was designed to improve upon the natural glycopeptides currently available, vancomycin and teicoplanin. It possesses in vitro activity against a variety of Gram-positive pathogens including MRSA and methicillin-resistant Staphylococcus epidermidis (MRSE).

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
Water	50.0	26.98
DMSO	24.0	12.95

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	**1 mg**	**5 mg**	**10 mg**
1 mM	0.54 mL	2.70 mL	5.40 mL
5 mM	0.11 mL	0.54 mL	1.08 mL
10 mM	0.05 mL	0.27 mL	0.54 mL
50 mM	0.01 mL	0.05 mL	0.11 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. Neudorfer K, Schmidt-Malan SM, Patel R. Dalbavancin is active in vitro against biofilms formed by dalbavancin-susceptible enterococci. Diagn Microbiol Infect Dis. 2018 Jan;90(1):58-63. doi: 10.1016/j.diagmicrobio.2017.09.015. Epub 2017 Sep 27. PMID: 29195766.

2. Bongiorno D, Lazzaro LM, Stefani S, Campanile F. In Vitro Activity of Dalbavancin against Refractory Multidrug-Resistant (MDR) Staphylococcus aureus Isolates. Antibiotics (Basel). 2020 Dec 3;9(12):865. doi: 10.3390/antibiotics9120865. PMID: 33287376; PMCID: PMC7761838.

In vivo study

1. Wang G, Yang ML, Duan ZL, Liu FL, Jin L, Long CB, Zhang M, Tang XP, Xu L, Li YC, Kamau PM, Yang L, Liu HQ, Xu JW, Chen JK, Zheng YT, Peng XZ, Lai R. Dalbavancin binds ACE2 to block its interaction with SARS-CoV-2 spike protein and is effective in inhibiting SARS-CoV-2 infection in animal models. Cell Res. 2021 Jan;31(1):17-24. doi: 10.1038/s41422-020-00450-0. Epub 2020 Dec 1. PMID: 33262453; PMCID: PMC7705431.

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2. Silva V, Antão HS, Guimarães J, Prada J, Pires I, Martins Â, Maltez L, Pereira JE, Capelo JL, Igrejas G, Poeta P. Efficacy of dalbavancin against MRSA biofilms in a rat model of orthopaedic implant-associated infection. J Antimicrob Chemother. 2020 Aug 1;75(8):2182-2187. doi: 10.1093/jac/dkaa163. PMID: 32417903.

7. Bioactivity

Biological target: Dalbavancin hydrochloride (MDL-63397 hydrochloride) is a semisynthetic lipoglycopeptide antibiotic with potent bactericidal activity against Gram-positive bacteria.

In vitro activity

Dalbavancin showed potent in vitro activity against S. aureus (MIC range < 0.007 – 0.125 mg/L), with MIC50/MIC90 values within the susceptibility breakpoints. Remarkably, its activity was retained against the most refractory MDR-MRSA isolates belonging to the major MRSA clones: ST228-SCCmec I, ST8-SCCmec IV, ST239-SCCmec III, ST5-SCCmec II, and ST22-SCCmec-IVh. Dalbavancin also demonstrated activity against DNS isolates, making it a valuable tool against these periodically reported strains.

Reference: Antibiotics (Basel). 2020 Dec 3;9(12):865. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7761838/

In vivo activity

Mice infected with SARS-CoV-2 displayed transient infection and viral replication, but little virus was found at 72 hpi. At 24 hpi and 72 hpi, the viral load in the lungs of the control group was ~107 and ~105 copies/μg total RNA, respectively, whereas that in mice treated with a single dose of dalbavancin (130 mg/kg intraperitoneal administration at day 0) decreased to ~103 and ~102 copies, respectively (Fig. 4a). Thus, dalbavancin administration almost completely inhibited viral replication. Histopathological examination of the lungs indicated that most of mice in the control group showed typical interstitial pneumonia, characterized by infiltration of significant macrophages and lymphocytes into the alveolar interstitium, and accumulation of macrophages in alveolar cavities. In contrast, dalbavancin administration showed significant protective effects and prevented histopathological injuries caused by virus infection, with only mild histopathological injuries (Fig. 4b). Viral infection caused a decrease in mouse body weight, while dalbavancin administration rescued this decrease (Fig. 4c), with little effect on body temperature (Supplementary information, Fig. S2).

Reference: Cell Res. 2021 Jan;31(1):17-24. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7705431/