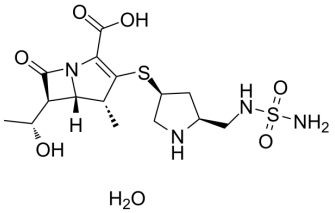
Doripenem monohydrate

Cat. No.:	HY-B0187A
CAS No.:	364622-82-2
Molecular Formula:	$C_{15}H_{26}N_4O_7S_2$
Molecular Weight:	438.52
Target:	Bacterial; Antibiotic
Pathway:	Anti-infection
Storage:	Powder -20°C 3 years 4°C 2 years In solvent -80°C 2 years -20°C 1 year



H_2O

SOLVENT & SOLUBILITY

In Vitro

DMSO : 50 mg/mL (114.02 mM; Need ultrasonic)
H_2O : 10 mg/mL (22.80 mM; Need ultrasonic)

Preparing Stock Solutions

Solvent / Mass / Concentration	1 mg	5 mg	10 mg
1 mM	2.2804 mL	11.4020 mL	22.8040 mL
5 mM	0.4561 mL	2.2804 mL	4.5608 mL
10 mM	0.2280 mL	1.1402 mL	2.2804 mL

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

In Vivo

1. Add each solvent one by one: PBS
   Solubility: 33.33 mg/mL (76.01 mM); Clear solution; Need ultrasonic
2. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: ≥ 3 mg/mL (6.84 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 3 mg/mL (6.84 mM); Clear solution
4. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 3 mg/mL (6.84 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Doripenem (S 4661) monohydrate, a 1β-methyl parenteral carbapenem, has very broad-spectrum activity against Gram-positive and Gram-negative aerobic bacteria[1][2].

IC_{50} & Target

β-lactam

In Vivo

Doripenem (S 4661; MIC range of 2 to 16 μg/ml; Subcutaneous; 1-h and 4-h infusion; 0.2 ml injections) monohydrate demonstrates antibacterial killing for P. aeruginosa[1].

Doripenem (10, 50, 150 mg/kg; 0.2-ml volumes; subcutaneously 2 h) monohydrate has a $T_{1/2}$ of 0.41 hours, a CL of 673.9 mL/h•kg for mice with 10 mg/kg[1].

Pharmacokinetic Parameters of Doripenem in mice[1].

	SC (10 mg/kg)	SC (50 mg/kg)	SC (150 mg/kg)
T_{max} (h)	0.25	0.38	0.22
C_{max} (μg/mL)	16.3	59.7	194.4
AUC_{0-24} (ng⊠h /mL)	13.5	62.4	168
$t_{1/2}$ (h)	0.41	0.34	0.44
CL (mL/h/kg)	673.9	783.3	850.5
V (mL/kg)	400.7	384.7	545.8

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

Animal Model:	Specific-pathogen-free, female ICR mice weighing approximately 25 g with P. aeruginosa-infected thighs[1]
Dosage:	MIC range of 2 to 16 μg/ml
Administration:	Subcutaneous; 1-h and 4-h infusion; 0.2 ml injections
Result:	Demonstrated antibacterial killing for P. aeruginosa.

CUSTOMER VALIDATION

- Antimicrob Agents Chemother. 2023 May 18;e0160322.
- Antimicrob Agents Chemother. 2018 May 25;62(6). pii: e00282-18.
- Microbiol Spectr. 2023 Apr 24;e0069223.
- Microbiol Spectr. 2022 Dec 8;e0303822.
- Biomed Res Int. 2018 Jul 2;2018:3579832.

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REFERENCES

[1]. Aryun Kim, et al. In vivo pharmacodynamic profiling of doripenem against Pseudomonas aeruginosa by simulating human exposures. Antimicrob Agents Chemother. 2008 Jul;52(7):2497-502.

[2]. Jones RN, et al. Doripenem (S-4661), a novel carbapenem: comparative activity against contemporary pathogens including bactericidal action and preliminary in vitro

methods evaluations. J Antimicrob Chemother. 2004 Jul;54(1):144-54. Epub 2004 Jun 9.

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