# Vaborbactam

**Cat. No.:** HY-19930

**CAS No.:** 1360457-46-0

**Molecular Formula:** $C_{12}H_{16}BNO_5S$

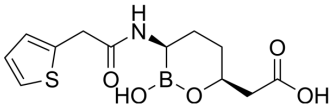
**Molecular Weight:** 297.14

**Target:** Bacterial; Beta-lactamase

**Pathway:** Anti-infection

**Storage:**

| | | |
|---|---|---|
| Powder | -20°C | 3 years |
| | 4°C | 2 years |
| In solvent | -80°C | 2 years |
| | -20°C | 1 year |



## SOLVENT & SOLUBILITY

**In Vitro**

$H_2O$ : 5.26 mg/mL (17.70 mM; Need ultrasonic)

| Preparing Stock Solutions | Solvent / Mass / Concentration | 1 mg | 5 mg | 10 mg |
|---|---|---|---|---|
| | 1 mM | 3.3654 mL | 16.8271 mL | 33.6542 mL |
| | 5 mM | 0.6731 mL | 3.3654 mL | 6.7308 mL |
| | 10 mM | 0.3365 mL | 1.6827 mL | 3.3654 mL |

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

**In Vivo**

1. Add each solvent one by one: PBS
   Solubility: 27.5 mg/mL (92.55 mM); Clear solution; Need ultrasonic
2. Add each solvent one by one: 108 mM sodium carbonate
   Solubility: 25 mg/mL (84.14 mM); Clear solution; Need ultrasonic
3. Add each solvent one by one: 5% DMSO >> 40% PEG300 >> 5% Tween-80 >> 50% saline
   Solubility: ≥ 2.62 mg/mL (8.82 mM); Clear solution
4. Add each solvent one by one: 5% DMSO >> 95% (20% SBE-β-CD in saline)
   Solubility: ≥ 2.62 mg/mL (8.82 mM); Clear solution

## BIOLOGICAL ACTIVITY

**Description**

Vaborbactam (RPX7009) is a cyclic boronic acid pharmacophore β-lactamase inhibitor.

**In Vitro**

Vaborbactam is a broad spectrum of inhibition of β-lactamases, with particularly potent activity against KPC, CTX-M, SHV, and CMY enzymes[1]. Vaborbactam restores SM 7338 activity for 72.7 to 98.1% of CPE isolates at ≤2 μg/mL, and maximum potentiation is achieved with fixed concentrations of ≥8 μg/mL of the inhibitor (≥96.5% of isolates are inhibited at ≤2 μg/mL

| | |
|---|---|
| | of SM 7338-vaborbactam). SM 7338-vaborbactam with a fixed concentration of 8 μg/mL of the inhibitor (MIC50, ≤0.06 μg/mL for all organisms) inhibits 93.7% of the CPE isolates displaying elevated SM 7338 MICs at ≤1 μg/mL[2]. By forming a reversible dative bond with the blactamase, vaborbactam acts as a competitive inhibitor and is not hydrolyzed by the b-lactamase[3].<br>MCE has not independently confirmed the accuracy of these methods. They are for reference only. |
| **In Vivo** | Vaborbactam is well tolerated and has a half-life of 1.23 h, and steadystate volume of distribution of 21.0 L in subjects[3].<br>MCE has not independently confirmed the accuracy of these methods. They are for reference only. |

## CUSTOMER VALIDATION

- Int J Antimicrob Agents. 2021 Sep 18;106439.
- J Clin Microbiol. 2020 Aug 24;58(9):e00932-20.
- Int J Infect Dis. 2021 Apr 14;S1201-9712(21)00346-5.
- J Med Chem. 2021 Jul 31.
- Pharmaceutics. 2023 Nov 30, 15(12), 2705.

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## REFERENCES

[1]. Hecker SJ, et al. Discovery of a Cyclic Boronic Acid β-Lactamase Inhibitor (RPX7009) with Utility vs Class A Serine Carbapenemases. J Med Chem. 2015 May 14;58(9):3682-92.

[2]. Castanheira M, et al. Effect of the β-Lactamase Inhibitor Vaborbactam Combined with SM 7338 against Serine Carbapenemase-Producing Enterobacteriaceae. Antimicrob Agents Chemother. 2016 Aug 22;60(9):5454-8.

[3]. Wong D, et al. Novel Beta-Lactamase Inhibitors: Unlocking Their Potential in Therapy.



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