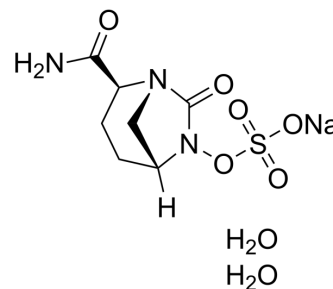


## Avibactam sodium dihydrate

Cat. No.:	HY-14879C
Molecular Formula:	C <sub>7</sub> H <sub>14</sub> N <sub>3</sub> NaO <sub>8</sub> S
Molecular Weight:	323.26
Target:	Bacterial; Antibiotic; Beta-lactamase
Pathway:	Anti-infection
Storage:	Please store the product under the recommended conditions in the Certificate of Analysis.



### BIOLOGICAL ACTIVITY

<b>Description</b>	Avibactam sodium (NXL-104) dihydrate is a covalent and reversible non-β-lactam β-lactamase inhibitor which inhibits β-lactamase TEM-1 and CTX-M-15 with IC <sub>50</sub> s of 8 nM and 5 nM, respectively <sup>[1]</sup> .								
<b>IC<sub>50</sub> &amp; Target</b>	IC <sub>50</sub> : 5 nM (CTX-M-15), 8 nM (TEM-1) <sup>[1]</sup>								
<b>In Vitro</b>	<p>Avibactam is a molecule with little antibacterial activity, that inhibits class A and C β-lactamases, but not metallo types and Acinetobacter OXA carbapenemases<sup>[2]</sup>.</p> <p><a href="#">Ceftazidime</a> (HY-B0593)-Avibactam (0-256 mg/L) inhibits 16 bla<sub>KPC-2</sub> positive and 1 of bla<sub>OXA-232</sub> positive Klebsiella pneumonia growth with MIC<sub>50</sub> and MIC<sub>90</sub> for both 8 mg/L<sup>[4]</sup>.</p> <p>MCE has not independently confirmed the accuracy of these methods. They are for reference only.</p>								
<b>In Vivo</b>	<p>Ceftazidime-Avibactam (0.375 mg/g; s.c.; q8h for 10 days) has a significant effect on the bacteria and led to a certain therapeutic efficacy in K. pneumoniae strain Y8 infected mouse model<sup>[3]</sup>.</p> <p>Avibactam (64 mg/kg; s.c.; once) shows mean estimated half-life in plasma in the terminal phase of 0.24 h in Pseudomonas aeruginosa infected neutropenic mice with lung infection<sup>[3]</sup>.</p> <p>MCE has not independently confirmed the accuracy of these methods. They are for reference only.</p> <table border="1"> <tr> <td>Animal Model:</td> <td>Six-week-old BALB/c mice (female), K. pneumoniae strain Y8 infection model<sup>[4]</sup></td> </tr> <tr> <td>Dosage:</td> <td>0.375 mg/g in combination with Ceftazidime</td> </tr> <tr> <td>Administration:</td> <td>Subcutaneous injection, 4 h post infection and given every 8 h for 10 days</td> </tr> <tr> <td>Result:</td> <td>70% of infection group mice died within 4 days, and all mice in the PBS group died within 13 days. All treatment group mice survived at 10 days post infection with the antibiotic applied every 8 h, whereas 100% of mice in this group died within 4 days after the antibiotic treatment stopped. The spleen and liver of treatment group mice showed lower CFU counts, as compare with that of infected group.</td> </tr> </table>	Animal Model:	Six-week-old BALB/c mice (female), K. pneumoniae strain Y8 infection model <sup>[4]</sup>	Dosage:	0.375 mg/g in combination with Ceftazidime	Administration:	Subcutaneous injection, 4 h post infection and given every 8 h for 10 days	Result:	70% of infection group mice died within 4 days, and all mice in the PBS group died within 13 days. All treatment group mice survived at 10 days post infection with the antibiotic applied every 8 h, whereas 100% of mice in this group died within 4 days after the antibiotic treatment stopped. The spleen and liver of treatment group mice showed lower CFU counts, as compare with that of infected group.
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### CUSTOMER VALIDATION

- Biosens Bioelectron. 2021 Jul 21;193:113526.
- Int J Antimicrob Agents. 2018 Aug;52(2):269-271.
- J Clin Microbiol. 2023 Apr 18;e0164722.
- J Clin Microbiol. 2020 Aug 24;58(9):e00932-20.
- Int J Infect Dis. 2021 Apr 14;S1201-9712(21)00346-5.

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## REFERENCES

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- [1]. Zhang W, et al. In vitro and in vivo bactericidal activity of ceftazidime-avibactam against Carbapenemase-producing Klebsiella pneumoniae. Antimicrob Resist Infect Control. 2018 Nov 21;7:142.
- [2]. Ehmann DE, Jahic H, Ross PL, Gu RF, Hu J, Kern G, Walkup GK, Fisher SL. Avibactam is a covalent, reversible, non- $\beta$ -lactam  $\beta$ -lactamase inhibitor. Proc Natl Acad Sci U S A. 2012 Jul 17;109(29):11663-8.
- [3]. Castanheira M, Sader HS, Farrell DJ, Mendes RE, Jones RN. Activity of Ceftaroline-Avibactam Tested against Gram-Negative Organism Populations, including Strains Expressing One or More  $\beta$ -Lactamases and Methicillin-Resistant Staphylococcus aureus Carrying Various Staphylococcal Cassette Chromosome mec Types. Antimicrob Agents Chemother. 2012 Sep;56(9):4779-85.
- [4]. Livermore DM, Mushtaq S, Barker K, Hope R, Warner M, Woodford N. Characterization of  $\beta$ -lactamase and porin mutants of Enterobacteriaceae selected with ceftaroline + avibactam (NXL104). J Antimicrob Chemother. 2012 Jun;67(6):1354-8.
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**Caution: Product has not been fully validated for medical applications. For research use only.**

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