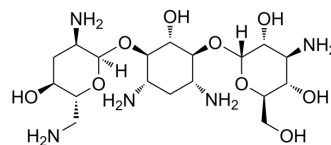


## Tobramycin

|                           |   |                               |
|---------------------------|---|-------------------------------|
| <b>Cat. No.:</b>          | HY-B0441  |                               |
| <b>CAS No.:</b>           | 32986-56-4  |                               |
| <b>Molecular Formula:</b> | C <sub>18</sub> H <sub>37</sub> N <sub>5</sub> O <sub>9</sub> |                               |
| <b>Molecular Weight:</b>  | 467.51  |                               |
| <b>Target:</b>            | Bacterial; Antibiotic   |                               |
| <b>Pathway:</b>           | Anti-infection  |                               |
| <b>Storage:</b>           | Powder  | -20°C 3 years<br>4°C 2 years  |
|                           | In solvent  | -80°C 2 years<br>-20°C 1 year |



### SOLVENT & SOLUBILITY

#### In Vitro

H<sub>2</sub>O : ≥ 100 mg/mL (213.90 mM)  
 DMSO : 2 mg/mL (4.28 mM; Need ultrasonic)  
 \* "≥" means soluble, but saturation unknown.

| Preparing Stock Solutions | Solvent Concentration | Mass      |            |            |
|---------------------------|-----------------------|-----------|------------|------------|
|                           |                       | 1 mg      | 5 mg       | 10 mg      |
|                           | 1 mM                  | 2.1390 mL | 10.6950 mL | 21.3899 mL |
|                           | 5 mM                  | 0.4278 mL | 2.1390 mL  | 4.2780 mL  |
|                           | 10 mM                 | 0.2139 mL | 1.0695 mL  | 2.1390 mL  |

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

#### In Vivo

1. Add each solvent one by one: PBS  
 Solubility: 100 mg/mL (213.90 mM); Clear solution; Need ultrasonic

### BIOLOGICAL ACTIVITY

#### Description

Tobramycin (Nebramycin Factor 6) is a parenterally administered, broad spectrum aminoglycoside antibiotic that is widely used in the treatment of moderate to severe bacterial infections due to sensitive organisms<sup>[1]</sup>. Tobramycin can be used to pneumonia research caused by *Pseudomonas aeruginosa*<sup>[2][3]</sup>.

#### IC<sub>50</sub> & Target

Aminoglycoside

#### In Vitro

Tobramycin (0-50 ng/mL; 24 hours) combines with mycobacterium fortuitum enzyme (PodA) can greatly decrease *P. aeruginosa* cell viability<sup>[2]</sup>.  
 MCE has not independently confirmed the accuracy of these methods. They are for reference only.  
 Cell Viability Assay<sup>[2]</sup>

|                  |  |
|------------------|--|
| Cell Line:       | Pseudomonas aeruginosa   |
| Concentration:   | 2,10,50 ng/mL  |
| Incubation Time: | 24 h   |
| Result:          | Greatly decreased cell viability compared to no protein or inactive mycobacterium fortuitum enzyme (PodA) controls while PodA10 alone did not increase cell death. |

#### In Vivo

Tobramycin (50-400 mg/kg/day, i.p., once every 4h) combines with Meropenem (HY-13678) produces bacterial cell kill effect at low doses of both drugs in murine pneumonia model. [3].

Tobramycin (s.c., single dose) LD<sub>50</sub> values in mice and rats are 441 and 969 mg/kg, respectively<sup>[4]</sup>.

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

|                 |  |
|-----------------|--|
| Animal Model:   | Murine Model of Pseudomonas aeruginosa Pneumonia Female, Swiss-Webster mice [3]  |
| Dosage:         | 50, 100, 150, 214, and 400 mg/kg/day   |
| Administration: | Intraperitoneal injection (i.p.) ,once every 4h  |
| Result:         | Had near-maximal killing of the wild-type bacteria occurred at approximately 150 mg/kg/day when tobramycin alone.<br>Combinated with Meropenem (HY-13678) produced near-maximal effect (i.e., bacterial cell kill) at low doses of both drugs (60 and 50 mg/kg/day for Meropenem (HY-13678) and tobramycin, respectively).   |
| Animal Model:   | Mice, rats, cats and dogs for toxicologic evaluation <sup>[4]</sup>  |
| Dosage:         | 7.5,15,30,120,441,969 mg/kg  |
| Administration: | Subcutaneous injection (s.c.), Intravenous injection (i.v.) ,Intramuscular injection(i.m.)   |
| Result:         | The s.c. LD <sub>50</sub> values in mice and rats were 441 and 969 mg/kg, respectively.<br>Within 1 hour after treated, death with central nervous system depression as a precursor occurred in rats and mice.<br>A 100 mg/kg iv dose in chloraloseanesthetized catsproduced a moderate, transient decreasein blood pressure and a significant decrease in inspiratory volume and soleus twitch force.<br>Changed renal tissue in rats which were given daily sc doses of 15-120 mg/kg for 3 months. im dose of 7.5 mg/kg for a l-month had no apparent effect on dogs, but a 30 mg/kg dose for a l-month produced severerenal damage. |

#### CUSTOMER VALIDATION

- Nat Commun. 2022 Mar 2;13(1):1116.
- Food Chem. 2022 Sep 26;403:134399.
- Appl Microbiol Biotechnol. 2022 Apr;106(7):2689-2702.
- Curr Microbiol. 2021 Dec 14;79(1):12.
- bioRxiv. 2024 Feb 9.

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## REFERENCES

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- [1]. VanDrissse CM, et.al. Computationally designed pyocyanin demethylase acts synergistically with tobramycin to kill recalcitrant *Pseudomonas aeruginosa* biofilms. *Proc Natl Acad Sci U S A*. 2021 Mar 23;118(12):e2022012118.
- [2]. Louie A, et.al. Impact of meropenem in combination with tobramycin in a murine model of *Pseudomonas aeruginosa* pneumonia. *Antimicrob Agents Chemother*. 2013 Jun;57(6):2788-92.
- [3]. Welles JS, et.al. Preclinical toxicology studies with tobramycin. *Toxicol Appl Pharmacol*. 1973 Jul;25(3):398-409.
- [4]. Tobramycin.
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**Caution: Product has not been fully validated for medical applications. For research use only.**

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