Tobramycin

Cat. No.: HY-B0441

CAS No.: 32986-56-4

Molecular Formula: $C_{18}H_{37}N_5O_9$

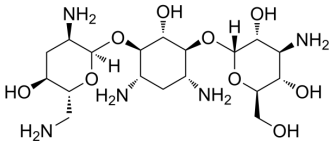
Molecular Weight: 467.51

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



SOLVENT & SOLUBILITY

In Vitro

H_2O : ≥ 100 mg/mL (213.90 mM)

DMSO : 2 mg/mL (4.28 mM; Need ultrasonic)

* "≥" means soluble, but saturation unknown.

Preparing Stock Solutions

Solvent / Mass / Concentration	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[1].Tobramycin can be used to pneumonia research caused by Pseudomonas aeruginosa[2][3].

IC_{50} & Target

Aminoglycoside

In Vitro

Tobramycin (0-50 ng/mL; 24 hours) combinates with mycobacterium fortuitum enzyme (PodA) can greatly decreases P. aeruginosa cell viability[2].

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

Cell Viability Assay[2]

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) combinates 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_{50} values in mice and rats are 441 and 969 mg/kg, respectively[4].

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. 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[4]
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_{50} values in mice and rats were 441 and 969 mg/kg, respectively. Within 1 hour after treated, death with central nervous system depression as a precursor occurred in rats and mice. 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. 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.
- ACS Infect Dis. 2024 Apr 12;10(4):1327-1338.
- Appl Microbiol Biotechnol. 2022 Apr;106(7):2689-2702.
- Curr Microbiol. 2021 Dec 14;79(1):12.

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REFERENCES

[1]. VanDrisse 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.

Caution: Product has not been fully validated for medical applications. For research use only.

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