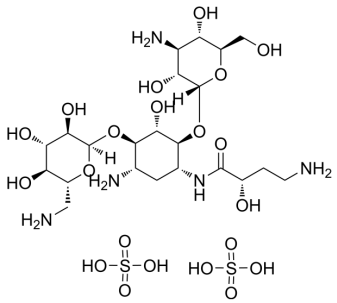
Amikacin disulfate

Cat. No.:	HY-B0509B
CAS No.:	39831-55-5
Molecular Formula:	$C_{22}H_{47}N_5O_{21}S_2$
Molecular Weight:	781.76
Target:	Bacterial; Antibiotic
Pathway:	Anti-infection
Storage:	4°C, sealed storage, away from moisture * In solvent : -80°C, 6 months; -20°C, 1 month (sealed storage, away from moisture)



SOLVENT & SOLUBILITY

In Vitro

H_2O : 100 mg/mL (127.92 mM; Need ultrasonic)
DMSO : < 1 mg/mL (insoluble or slightly soluble)

Preparing Stock Solutions	Mass / Solvent / Concentration	1 mg	5 mg	10 mg
	1 mM	1.2792 mL	6.3958 mL	12.7916 mL
	5 mM	0.2558 mL	1.2792 mL	2.5583 mL
	10 mM	0.1279 mL	0.6396 mL	1.2792 mL

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

In Vivo

1. Add each solvent one by one: PBS
   Solubility: 50 mg/mL (63.96 mM); Clear solution; Need ultrasonic

BIOLOGICAL ACTIVITY

Description

Amikacin disulfate (BAY 41-6551 dissulfate) is an aminoglycoside antibiotic and a semisynthetic analog of kanamycin. Amikacin disulfate is bactericidal, acting directly on the 30S and 50S bacerial ribosomal subunits to inhibit protein synthesis. Amikacin disulfate is very active against most Gram-negative bacteria including gentamicin- and tobramycin-resistant strains. Amikacin disulfate also inhibits the infections caused by susceptible Nocardia and nontuberculous mycobacteria[1][2].

IC_{50} & Target

Aminoglycoside

In Vitro

Amikacin offers definite advantages for treating infections caused by organisms resistant to other aminoglycosides. Amikaci is affected by relatively few arninoglycoside-modifying enzymes. Amikacin is useful in the treatment of infections caused by Nocardia asteroides, Mycobacterium avium-intracellulare, and certain species of "rapid-growing" mycobacteria (that is, M. chelonae and M. fortuitumi)[1].
?Amikacin (100-1500 μM) causes a reliable dose-dependent loss of lateral line zebrafish hair cells with a LD_{50} value of 453 μM

	[3]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.
In Vivo	Amikacin (320?mg/kg; subcutaneous injection; daily; for 10 days; male Fischer rats) treatment increases the chance of serious hearing loss in rats in vivo[3]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Animal Model:	Male Fischer 344 rats (40-50-day-old)[3]
Dosage:	320 mg/kg
Administration:	Subcutaneous injection; daily; for 10 days
Result:	Induced hearing loss in rats.

CUSTOMER VALIDATION

- Nat Commun. 2022 Mar 2;13(1):1116.
- Int J Antimicrob Agents. 2018 Aug;52(2):269-271.
- J Antimicrob Chemother. 2020 Sep 1;75(9):2609-2615.
- J Antimicrob Chemother. 2020 Jul 1;75(7):1850-1858.
- Appl Microbiol Biotechnol. 2022 Apr;106(7):2689-2702.

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REFERENCES

[1]. Edson, R.S. and C.L. Terrell, The aminoglycosides. Mayo Clin Proc, 1999. 74(5): p. 519-28.

[2]. Ristuccia AM, et al. An overview of amikacin. Ther Drug Monit. 1985;7(1):12-25.

[3]. Siân R Kitcher, et al. ORC-13661 Protects Sensory Hair Cells From Aminoglycoside and Cisplatin Ototoxicity. JCI Insight. 2019 Aug 8;4(15):e126764.

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

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