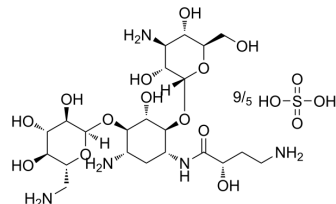


## Amikacin sulfate

<b>Cat. No.:</b>	HY-107813
<b>CAS No.:</b>	149022-22-0
<b>Molecular Formula:</b>	C <sub>22</sub> H <sub>43</sub> N <sub>5</sub> O <sub>13</sub> ·9/5H <sub>2</sub> O <sub>4</sub> S
<b>Molecular Weight:</b>	762.14
<b>Target:</b>	Bacterial; Antibiotic
<b>Pathway:</b>	Anti-infection
<b>Storage:</b>	-20°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<sub>2</sub>O : 25 mg/mL (32.80 mM); ultrasonic and warming and heat to 60°C)

Solvent	Mass	Concentration		
		1 mg	5 mg	10 mg
Preparing Stock Solutions	1 mM	1.3121 mL	6.5605 mL	13.1209 mL
	5 mM	0.2624 mL	1.3121 mL	2.6242 mL
	10 mM	0.1312 mL	0.6560 mL	1.3121 mL

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

### BIOLOGICAL ACTIVITY

#### Description

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

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

Aminoglycoside

#### In Vitro

Amikacin offers definite advantages for treating infections caused by organisms resistant to other aminoglycosides. Amikacin is affected by relatively few aminoglycoside-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. fortuitum*)<sup>[1]</sup>.

Amikacin (100-1500 μM) causes a reliable dose-dependent loss of lateral line zebrafish hair cells with a LD<sub>50</sub> value of 453 μM<sup>[3]</sup>.

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<sup>[3]</sup>.

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) <sup>[3]</sup>
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.**

Tel: 609-228-6898

Fax: 609-228-5909

E-mail: [tech@MedChemExpress.com](mailto:tech@MedChemExpress.com)

Address: 1 Deer Park Dr, Suite Q, Monmouth Junction, NJ 08852, USA