Kanamycin sulfate

Cat. No.: HY-16566A

CAS No.: 25389-94-0

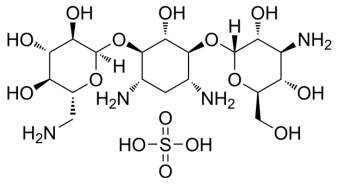
Molecular Formula: $C_{18}H_{38}N_4O_{15}S$

Molecular Weight: 582.58

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 : ≥ 25 mg/mL (42.91 mM)
DMSO : < 1 mg/mL (insoluble or slightly soluble)
* "≥" means soluble, but saturation unknown.

Preparing Stock Solutions	Mass / Solvent / Concentration	1 mg	5 mg	10 mg
	1 mM	1.7165 mL	8.5825 mL	17.1650 mL
	5 mM	0.3433 mL	1.7165 mL	3.4330 mL
	10 mM	0.1717 mL	0.8583 mL	1.7165 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 (85.83 mM); Clear solution; Need ultrasonic
2. Add each solvent one by one: Saline
   Solubility: 50 mg/mL (85.83 mM); Clear solution; Need ultrasonic

BIOLOGICAL ACTIVITY

Description

Kanamycin (Kanamycin A) sulfate is an orally active antibacterial (gram-negative/positive bacteria) agent, inhibits translocation and causes misencoding by binding to the 70 S ribosomal subunit. Kanamycin sulfate shows good inhibitory activity to both M. tuberculosis (sensitive and drug-resistant) and K. pneumonia, which can be used in studies of tuberculosis and pneumonia[1][2][3][4].

In Vitro

Kanamycin sulfate (0.1-100 μg/mL; 2 weeks) exhibits good antibacterial activity (MIC=1-5 μg/mL) to various strains of mycobacteria in vitro[1].
MCE has not independently confirmed the accuracy of these methods. They are for reference only.
Cell Viability Assay[1]

Cell Line:	mycobacteria H37Rv, H2, H37RvR-PAS, Ravenel, Kirchbergand and BCG.
Concentration:	0.1-100 μg/mL
Incubation Time:	2 weeks
Result:	Showed good antibacterial activity to various strains of mycobacteria (H37Rv, H2, H37RvR-PAS, Ravenel, and BCG) with MICs were 1 μg/mL and 5 μg/mL for strain of Kirchbergand.

In Vivo

Kanamycin sulfate (2, 4 mg/kg; s.c.; once daily, 6 times a week for 3 weeks) inhibits growth of bovine tubercle bacilli in lung and spleen of mice[1].

Kanamycin sulfate (1.25, 5 mg/kg; s.c.; single (at 3 h after infection)) inhibits the multiplication of K. pneumonia DT-S in lung, trachea, and blood of mice and in proportion to the dose administration, and also increases the survival rate of mice[2].

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

Animal Model:	Inbred strain normal mice (14-16 g; bovine tubercle bacilli (Ravenel strain) infected model)[1].
Dosage:	2, 4 mg/kg
Administration:	Subcutaneous injection; once daily, 6 times a week for 3 weeks.
Result:	Exerted a marked effect to inhibit the multiplication of the tuberculosis in vivo, especially in the lung of mice.

Animal Model:	Slc:ICR male mice (4-week-old; 18-24 g; K. pneumonia DT-S infection model (by the aerosol method))[2].
Dosage:	1.25, 5 mg/kg
Administration:	Subcutaneous administration; single (at 3 h after infection).
Result:	Suppressed the growth of K. pneumonia DT-S in lung, trachea, and blood in proportion to the dose administration. Resulted in 90% survival at 6 days after infection (negative control group: all died within 4 days), and cleared the K. pneumonia DT-S from lung, trachea, and blood of mice within 48 h (when dosage at 5 mg/kg).

CUSTOMER VALIDATION

- Nucleic Acids Res. 2022 Dec 12;gkac1141.
- Sci Adv. 2023 Feb 17;9(7):eade4770.
- Cell Death Dis. 2021 May 18;12(6):509.
- Food Chem. 2022 Sep 26;403:134399.
- Microb Biotechnol. 2021 Mar 15.

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REFERENCES

[1]. YANAGISAWA K, et al. Studies on kanamycin, a new antibiotic against tubercle bacilli. I. Effect on virulent tubercle bacilli in vitro and in mice. J Antibiot (Tokyo). 1957 Nov;10(6):233-5.

[2]. Nishi T, et al. Experimental respiratory tract infection with Klebsiella pneumoniae DT-S in mice: chemotherapy with kanamycin. Antimicrob Agents Chemother. 1980 Mar;17(3):494-505.

[3]. Misumi M, et al. Interaction of kanamycin and related antibiotics with the large subunit of ribosomes and the inhibition of translocation. Biochem Biophys Res Commun. 1978 Sep 29;84(2):358-65.

[4]. Misumi M, et al. Mechanism of inhibition of translocation by kanamycin and viomycin: a comparative study with fusidic acid. Biochem Biophys Res Commun. 1980 Jan 29;92(2):647-54.

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