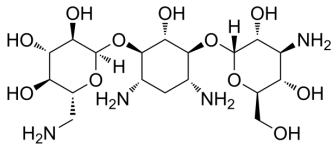
Kanamycin

Cat. No.:	HY-16566
CAS No.:	59-01-8
Molecular Formula:	$C_{18}H_{36}N_4O_{11}$
Molecular Weight:	484.5
Target:	Antibiotic; Bacterial
Pathway:	Anti-infection
Storage:	Please store the product under the recommended conditions in the Certificate of Analysis.



BIOLOGICAL ACTIVITY

Description

Kanamycin (Kanamycin A) is an orally active antibacterial (gram-negative/positive bacteria) agent, inhibits translocation and causes misencoding by binding to the 70 S ribosomal subunit. Kanamycin 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].

IC_{50} & Target

Aminoglycoside

In Vitro

Kanamycin (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 (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 (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].

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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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