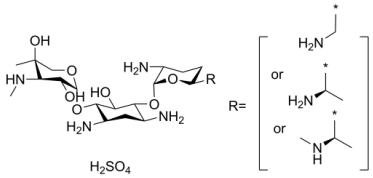
Data Sheet

Product Name:	Gentamicin (sulfate)
Cat. No.:	CS-6360
CAS No.:	1405-41-0
Molecular Formula:	$C_{24}H_{55}N_7O_{11}S^{3*}$
Molecular Weight:	561.65 (Average)
Target:	Antibiotic; Bacterial
Pathway:	Anti-infection
Solubility:	H_2O : ≥ 30 mg/mL;DMSO : < 1 mg/mL (ultrasonic;warming;heat to 60°C)



BIOLOGICAL ACTIVITY:

Gentamicin sulfate, an orally active aminoglycoside antibiotic, inhibits the growth of both gram-positive and gram-negative **bacteria** and to inhibit several strains of mycoplasma in tissue culture. Gentamicin sulfate inhibits **DNase I** with an **IC_{50}** of 0.57 mM[1][2][3][4].
IC50 & Target: IC50: 0.57 mM (DNase I)[1] ***In Vitro:*** Gentamicin is a more effective ***in vitro*** bacterial inhibitor than combined penicillin-streptomycin, is nontoxic to tissue culture monolayers, and does not inhibit virus replication[2].
Gentamicin has been used with success as an additive in commercial mycology media to inhibit growth of bacteria and has been shown to be bactericidal for a wider range of organisms (***Pseudomonas aeruginosa***, ***Proteus sp.***, and ***Streptococcus faecalis***) than penicillin and streptomycin[2].
Gentamicin does not interfere with the production of cytopathic effect by certain echoviruses and polioviruses in tissue culture, is nontoxic to Rhesus monkey kidney, HeLa, and human amnion cells, and is stable at autoclave temperatures[2].
Gentamicin is produced by various species of the genus ***Micromonospora***[3].
Gentamicin C1a binds in the major groove of the A-site of the RNA[3]. ***In Vivo:*** Gentamicin (oral and injectable forms) exhibits effective antibacterial activity against ***Yersinia pestis*** as demonstrated in a mouse infection model[3].
Gentamicin (0.27 g/kg) shows a significant reduction of bacteria on the foreign body in mouse[4].

PROTOCOL (Extracted from published papers and Only for reference)

Animal Administration: [4]Mice: Bacterial challenged mice are treated with methicillin, gentamicin, both methicillin and gentamicin, or no antibiotics. The treatment is given three times a day for up to 3 days. Each dose of methicillin is 75 mg per mouse (3 g/kg of body weight), and the gentamicin dose is 0.75 mg per mouse (0.03 g/kg). The antibiotics are given subcutaneously in 0.1 or 0.5 mL of saline. Mice are sacrificed and serum and aspirate samples are collected[4].

References:

[1]. Xu W, et al. A rapid and sensitive method for kinetic study and activity assay of DNase I in vitro based on a GO-quenched hairpin probe. Anal Bioanal Chem. 2016 May;408(14):3801-9.

[2]. Rudin A, et al. Antibacterial activity of gentamicin sulfate in tissue culture. Appl Microbiol. 1970 Dec;20(6):989-90.

[3]. Kumar CG, et al. Microbial biosynthesis and applications of gentamicin: a critical appraisal.

[4]. Espersen F, et al. Effect of treatment with methicillin and gentamicin in a new experimental mouse model of foreignbody infection. Antimicrob Agents Chemother. 1994 Sep;38(9):2047-53.

CAIndexNames:

Gentamicin, sulfate (salt)

SMILES:

O=S(O)(O)=O.O[C@]1(C)C(NC)[C@@H](O)[C@@H](O[C@H]2C(N)C[C@H](N)[C@@H](O[C@@H]3[C@H](N)CC[C@@H]([R])O3)[C@@H]2O)OC1.NC[*].C[C@H]([*])N.C[C@H]([*])NC.[R=].[or].[or]

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