Gentamicin sulfate

Cat. No.: HY-A0276  
CAS No.: 1405-41-0  
Molecular Formula: C_{(19-21)}H_{(39-43)}N_5O_7·H_2SO_4  
Target: Bacterial  
Pathway: Anti-infection

Storage:  
- Powder: -20°C, 3 years; 4°C, 2 years  
- In solvent: -80°C, 6 months; -20°C, 1 month

**SOLVENT & SOLUBILITY**

**In Vitro**  
H_2O: ≥ 30 mg/mL  
*“≥” means soluble, but saturation unknown.

**BIOLOGICAL ACTIVITY**

**Description**  
Gentamicin sulfate, an aminoglycoside antibiotic, inhibits the growth of both gram-positive and gram-negative bacteria and to inhibit several strains of mycoplasma in tissue culture. It inhibits DNase I with an IC_{50} of 0.57 mM.

**IC_{50} & Target**  
IC_{50}: 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. It 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. It 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. Commercial gentamicin consists mainly of different gentamicin C components. Yoshizawa elucidates the 3D-structure of gentamicin C1a bound to an A-site RNA. Gentamicin C1a binds in the major groove of the A-site of the RNA[3].

**In Vivo**  
Gentamicin is currently the first choice aminoglycoside for the treatment of serious infections with alternatives being amikacin, netilmicin, and tobramycin. Gentamicin preparations are commercially available in three forms, namely otic, ophthalmic, and topical based on the respective function to treat infections of ear canal, eye, and skin. Oral and injectable forms of gentamicin are found to exhibit effective antibacterial activity against Yersinia pestis as demonstrated in a mouse infection model[3]. Treatment with up to nine doses of methicillin or gentamicin shows a significant reduction of bacteria on the foreign body[4].

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

REFERENCES


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