Pen-Strep Neomycin Solution product information

PI-C3424 V1.0

Product Name

Name: Penicillin-Streptomycin Neomycin Solution
10,000 units/mL Penicillin G Sodium Salt
10 mg/mL Streptomycin Sulfate
10 mg/mL Neomycin Sulfate

Cat. No.: C3424-0100

Size: 100 mL

Product Description

Penicillin-Streptomycin-Neomycin is an antibiotic combination solution composed of aminoglycoside-β lactam and Neomycin. The aminoglycoside-β lactam combination accords a broad spectrum bacteriocidal activity against both gram-positive and gram-negative bacteria. The mode of action (MOA) of Penicillin G interferes with the final stage of the bacterial cell wall synthesis causing disruption of the osmotic pressure gradient across the cell wall with ensuing lysis and cell death, whereas the MOA of streptomycin sulfate modifies the permeability of the cell wall, interferes with prokaryotic protein synthesis and cellular respiration by irreversibly binding to the 30S ribosome subunit to cause a misreading/miscoding of mRNA.

In essence, this activity freezes the 30S initiation complex (i.e., 30S-mRNA-tRNA) and interrupts any further progress in the initiation phase to chain-elongating ribosome. Both antibiotics, penicillin when combined with streptomycin synergistically enhance their range of activities and increase their effectiveness as opposed to when utilized on an individual basis.

Neomycin sulfate is an anti-microbial aminoglycoside (aminocyclitol) complex of neomycins isolated from *Steptomyces fradiae* and represents products of secondary carbohydrate metabolism. They are members of a closely related group of bactericidal antibiotics and have broadly similar toxicological features. Neomycin sulfate is an antimicrobial agent with bactericidal properties against Gram-positive and especially against Gram-negative bacteria. It is a polybasic compound, causing precipitation of micellar lipids by interaction with negatively charged fatty acids and dihydroxy bile acids. As a result, cholesterol is co-precipitated and its absorption impaired. Its mode of action (MOA) also includes binding to the L-6 protein of the 50S ribosomal subunit, inhibiting translocation, eliciting miscoding, inhibiting protein synthesis, and compromising the bacterial cell wall/membrane structure.

Cross-resistance occurs between kanamycin, neomycin, paromomycin, and framycetin, and partial cross-resistance has been reported between kanamycin and streptomycin. The aminoglycosides are excellent at synergizing with the β-lactams and glycopeptides to improve the efficiency of their bactericidal activity. However, it is incompatible with amphotericin, sodium bicarbonate and other pharmacological preparations.

Predominant Characteristics

- Easy-to-use
- Synergistic anti-bactericidal broad spectrum combination antibiotic
- Frozen solution
- Sterility tested

Storage and Stability

The product should be kept at **-20°C.**
The product is **light-sensitive** and therefore should not be left in the light.
Shelf life: 15 months from date of manufacture

Procedure

1. Take a bottle from refrigerator and read the label.
2. Allow to warm to room temperature prior to use.
3. Ensure that the cap of the bottle is tight.
4. Gently swirl the solution in the bottle to ensure homogeneity.
5. Wipe the outside of the bottle with a disinfectant solution such as 70% ethanol.
6. Take appropriate volume of the solution using aseptic/sterile technique under a laminar flow culture hood.

Manufacturer

Shanghai Dr. Cell Co., Ltd.

Issue Date

April 2023

Precaution and Disclaimer

For research use only, not for clinical diagnosis, and treatment.