

**Product Name**

Name: Penicillin-Streptomycin Solution,  
10,000 units/mL Penicillin G Sodium Salt,  
10 mg/mL Streptomycin Sulfate  
Cat. No.: C3420-0100  
Size: 100 mL

**Product Description**

Penicillin-Streptomycin is an aminoglycoside- $\beta$ -lactam antibiotic combination solution. It exhibits a broad-spectrum bactericidal activity against both gram-positive and gram-negative bacteria. The mode of action (MOA) of Penicillin G interferes with the final stage of synthesis of the bacterial cell wall 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 prokaryote protein synthesis and cellular respiration by irreversibly binding to the 30S ribosome subunit to cause a misreading/miscoding of the 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, a  $\beta$ -lactam, when combined with streptomycin, an aminoglycoside, synergistically enhance their range of activities and increase their effectiveness as opposed to when utilized on an individual basis.

The efficacy of the synergistic combination of penicillin-streptomycin is accomplished when the two individual drugs (i.e., both are bactericidal) interfere with two different constituents in the bacterial cellular or metabolic pathways. The result is an effect greater than could be attributed to their additive actions. In theory, a drug affecting the permeability of the cell membrane (i.e., streptomycin), plus a drug affecting the cell wall (i.e., penicillin), when used in combination, may be more effective than either drug used alone.

**Important Note**

In some cases, some antibiotics when used in combination often exert atypical cytotoxic effects at lower concentrations than when utilized on an individual basis. Please consult other comprehensive pharmacology references regarding antibiotic properties, characteristics, interactions and possible incompatibilities.

**Predominant Characteristics**

- Easy-To-Use
- Antibactericidal Broad-Spectrum Combination Antibiotic
- Frozen Solution
- Sterile Filtered (0.1  $\mu$ m)
- Cell Culture Performance 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 out from the freezer at around -20°C and read the label.
2. Thaw to room temperature.
3. Ensure that the cap of the bottle is tight.
4. Gently swirl the solution in the bottle.
5. Wipe the outside of the bottle with a disinfectant solution such as 70% ethanol.
6. Take out appropriate volume of the product using aseptic/sterile technique under a laminar-flow culture hood.
7. Recommended Use: 1:100 dilutions.

**Quality Control**

Penicillin-Streptomycin Solution is tested for sterility, pH, osmolality. In addition, each batch is tested for cell growth performance.

**Precaution and Disclaimer**

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