

**Product Name**

Name: Penicillin-Streptomycin-Amphotericin B Solution

10,000 units/mL Penicillin G Sodium Salt

10 mg/mL Streptomycin Sulfate

25 µg/mL Amphotericin B

Cat. No.: C3423-0100

Size: 100 mL

**Product Description**

Penicillin-Streptomycin-Amphotericin B is a mixed antibiotic solution composed of penicillin ( $\beta$ -lactam) streptomycin (aminoglycoside) and amphotericin B1 (antifungal). The aminoglycoside and  $\beta$ -lactam combination accord a broad-spectrum bactericidal activity against both gram-positive and gram-negative bacteria.

The mode of action (MOA) of penicillin G is to interfere 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 is to modify the permeability of the cell wall, interfere with prokaryotic protein synthesis and cellular respiration by irreversibly binding to the 30S ribosome subunit to cause a misreading/miscoding of mRNA. Both antibiotics, penicillin, a  $\beta$ -lactam, when combined with streptomycin synergistically enhance their range of activities and increase their effectiveness as opposed to when utilized on an individual basis.

Amphotericin B is a mixture of antimycotic polyenes and is used in cell culture for the control of fungi, yeasts and molds. These types of antimycotics are typically derived from *Streptomyces* spp. bacteria. Their mode of action (MOA) is their ability to bind to steroidal alcohols (e.g., cholesterol, cholestanol), specifically ergosterol, in the cell membrane of susceptible fungi by creating transmembrane channels per se thereby increasing membrane permeability. The resultant loss of cations (e.g.,  $K^+$ ,  $Na^+$ ,  $H^+$ ) or other low molecular weight substances including sugars, amino acids or nucleotides and the inhibitory effect on several membrane-bound enzymes in the extracellular space through these channels contribute to the demise of these types of organisms. Amphotericin B is primarily fungistatic at low concentrations against biphasic fungi, Dermatophyta and molds and it is also effective against yeasts.

The efficacy of the synergistic combination of Penicillin-Streptomycin-Amphotericin B Solution is accomplished when the two individual bactericidal drugs interfere with different constituents in the bacterial cellular or metabolic pathways. The result is an effect greater than could be attributed to additive action. 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. In this case, there is even evidence of synergism between these two drugs. On the other, amphotericin B has no antibacterial activity but may be fungistatic or fungicidal based on the dose concentration. In sum, VivaCell's Penicillin-Streptomycin-Amphotericin B Solution is an effective combination offering a wide spectrum of antimicrobial activity by serving as a drug of choice that is most active against potential pathogenic microorganisms or one of the least toxic alternatives available for cell culture.

**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.

Some of the predominant characteristics of Penicillin-Streptomycin-Amphotericin B Solution include:

- Easy-To-Use
- Synergistic Anti-Bactericidal Broad-Spectrum Combination Antibiotics
- An Anti-Mycotic Ionophore with Fungistatic-Fungicidal Activity
- 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: 18 months from date of manufacture

**Procedure**

1. Take a bottle out from a freezer at -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 to ensure homogeneity.
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.

**Quality Control**

Penicillin-Streptomycin-Amphotericin B Solution is tested for sterility, pH.

**Precaution and Disclaimer**

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