

Product Name:	Gentamicin Sulfate, USP
Product Number:	G006
CAS Number:	1405-41-0
Form:	Powder
Appearance:	White or almost white powder
Solubility:	Soluble in water (50mg/mL)
Source:	<i>Micromonospora</i> spp.
Water Content (Karl Fischer):	Loss on drying: <18.0%
pH:	3.5 - 5.5
Optical Rotation:	+107° - +121°
Storage Conditions:	2-8°C
Description:	<p>Gentamicin Sulfate, USP is an aminoglycoside antibiotic complex discovered in 1963 derived from fermentation of <i>Micromonospora purpurea</i> or <i>M. echinospora</i>. Gentamicin is composed of different components including Gentamicin C complex (<u>gentamicin C1</u>, <u>gentamicin C1a</u>, and <u>gentamicin C2</u>) which makes up 80% of the compound and has the highest antibacterial activity, along with Gentamicin A, B, X, and a few others which make up the remaining 20% of Gentamicin and have lower antibiotic activity. Gentamicin Sulfate is suitable for use in cell culture to prevent and control bacterial contamination and the compound is soluble in water (50 mg/ml).</p> <p>Gentamicin Sulfate, USP conforms to United States Pharmacopoeia specifications.</p> <p>For more Gentamicin products, click here.</p>
Mechanism of Action:	<p>Aminoglycosides are a widespread and versatile group of bioactive natural products. They target the 30S ribosomal subunit, blocking the translocation of peptidyl-tRNA from acceptor to donor. This results in an inability to read mRNA ultimately producing a faulty or nonexistent protein.</p>
Spectrum:	<p>Gentamicin Sulfate is a broad-spectrum antibiotic targeting Gram-positive and Gram-negative bacteria. It is effective against several strains of Mycoplasma. It also combats certain β-lactam sensitive VRE or vancomycin resistant Enterococcus; a "superbug."</p>

Microbiology Applications Gentamicin sulfate is commonly used as a selective agent to select for cells containing the gentamicin resistance gene, aacj-AaphD or aacC1. Gentamicin sulfate is generally used at a concentration of 10 - 50 µg/mL for eukaryotic cell culture and 15 µg/ml for prokaryotic cells.

Media Supplements

Gentamicin can be used as a selective agent in several types of isolation media:

Columbia Blood Agar - *Gardnerella vaginalis* Selective Supplement

VRE Medium - VRE Selective Supplement

Burkholderia cepacia Agar Base - *Burkholderia cepacia* Selective Supplement

Plant Biology Applications

Gentamicin sulfate inhibited differentiation of tracheary elements in pith parenchyma cells in cultures of romaine lettuce (*Lactuca sativa* L. var. *Romana*) at concentrations of 50-100 µg/ml. Similar results were obtained with cultured explants of Jerusalem artichoke tuber (*Helianthus tuberosus* L.). Callus formation was suppressed with increasing levels of Gentamicin Sulfate in both tissue systems. When studying cell division or xylem differentiation in culture, it is best to use ≤ 10 µg/ml.

Cancer Applications

Ovarian melanoma tumor cells were studied in 3D culture and Gentamicin Sulfate was used to prevent contamination when studying ovarian cell lines (OVCAR3, SKOV3, 222, EG, and A2780-PAR) and normal ovarian surface epithelial cell lines (HIO 1120 and HIO 180). Tumor cells formed matrix-rich tubular networks containing channels surrounding spheroids of tumor cells, and this network may represent either a primitive microcirculatory-like network, or a remodeled vascularized portion of a tumor (Sood et al, 2001).

References:

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