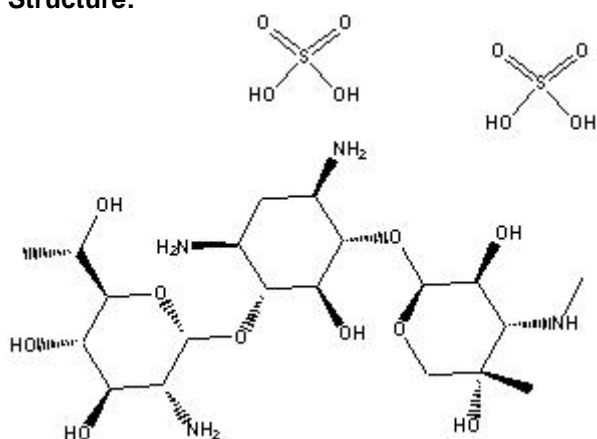


TECHNICAL INFORMATION

Catalog Number: 1672546, 1672548
G418 Sulfate Solution

Structure:



Molecular Formula: C₂₀H₄₀N₄O₁₀·H₂SO₄

Molecular Weight: 692.7

CAS # 108321-42-2

Synonyms: Antibiotic G418; Geneticin®

Form: 50 mg/ml active antibiotic sterile aqueous solution.

Description: G418 Sulfate is an aminoglycoside related to Gentamicin and is toxic to bacteria, yeast, higher plants, mammalian cells, protozoans and helminths. The resistance genes are located on transposons Tn601(903) and Tn5 and are bacterial in derivation, but they can be expressed in eucaryotic cells. By introducing these genes into cells, resistance to G418 Sulfate is conferred. It is used for the selection of transfected mammalian cells, yeast, dictyostelium, plant and bacteria. Certain transfection techniques in molecular biology and cell culture require the use of antibiotics to select for transfected cells. G418 Sulfate is an effective selecting agent utilized in killing prokaryotic and eucaryotic cells. The mechanism of action occurs by inhibiting protein synthesis by binding to ribosomes of prokaryotic and eucaryotic cells, therefore killing the non-resistant cells. Due to this binding mechanism, cells will generally take several days to die. Resistance is conferred by the bacterial gene for aminoglycoside-3-phosphotransferase that can be expressed in eucaryotic cells. Cells may have variable resistance and can take up to one week to die; adherent cells may be more sensitive.

Working Concentrations:

Generally, initial selection of genetic transformants requires a high concentration of Geneticin® Disulfate and a lower concentration for maintenance. Growing conditions and other environmental factors will also have major influences on the amount of Geneticin® Disulfate needed to optimize selective pressures. Therefore, working concentrations may vary from cell line to cell line.

| Cell Type | Concentration (active drug) | Application | Reference |
|---------------|--------------------------------------|---|---|
| Dictyostelium | a) 10 mg/L b) 30 mg/L | a) Cells grown in medium b) Cells plated on lyophilized bacteria | Hirth, et. al., <i>Proc. Natl. Acad. Sci.</i> , v. 79 , 7356-7360 (1982). |
| Mammalian | a) 400 mg/L-1000 mg/L b) 200 mg/L | a) For Selection b) For Maintenance | Canaani and Berg, <i>Proc. Natl. Acad. Sci.</i> , v. 79 , 5166-5170 (1982). |
| Plant | a) 25 mg/L-50 mg/L b) 10 mg/L | a) For Selection b) For Maintenance | Ursic, et. al., <i>Biochem. Biophys. Res. Comm.</i> , v. 101:3 , 1031-1037 (1981). |
| Yeast | a) 500 mg/L b) 125 mg/L-200 mg/L | a) For Selection b) For Maintenance | Jimenez and Davies, <i>Nature</i> , v. 287 , 869-871 (1980). |
| Bacteria | 8 mg/L-16 mg/L | For Selection | Waitz, et. al., <i>Antimicrob. Agents Chemother.</i> , v. 6:5 , 579-581 (1974). |

A multiplying cell will be affected by the presence of G418 sooner than a resting cell. It will take at least two cell generations to

achieve cell death in sensitive cell lines.

Availability:

| Catalog Number | Description | Size |
|----------------|-----------------------|-------|
| 1672546 | G418 Sulfate Solution | 20 ml |
| 1672548 | | 50 ml |

Also Available:

| Catalog Number | Description | Size |
|----------------|--------------------|--------------------------------|
| 158782 | Geneticin®, powder | 100 mg 250 mg 1 g 5 g |

Additional References:

- Kingston, R.E., *In Current Protocols in Molecular Biology*, Vol. 7 (Ausubel, F.M., et al., eds) John Wiley & Sons, New York, Unit 9.5 (1995)
- Ethier, S.P., and Taback, E., *Cancer Lett.* **74**,189 (1993).
- Waldren, C., et al., *Somat. Cell Mol. Biol.* **18**, 417 (1992).
- Santerra, R.F., et al., *Methods Mol. Biol.* **7**, 245 (1991).
- Maniatis, T., et al., *In Molecular Cloning, A Laboratory Manual, Second Editon.* Cold Spring Harbor, NY. (1989).
- Edwards, S.A. and Adamson, E.D., *J. Cell Physiol.* **133**, 46 (1987).
- Emst, J.F. and Chan, R.K., *J. Bacteriol.* **163**, 8 (1985).

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