Geneticin, G-418 Sulfate

Introduction

G418 sulfate, also called Geneticin, belongs to the aminoglycoside class of antibiotics and shares structural similarities with gentamicin B1. This compound serves as a selectable marker in both plant and mammalian cell culture systems. It can select for cells transformed with neomycin resistance gene.

G418 works by inducing premature termination codons during protein translation, effectively blocking polypeptide chain elongation. Cellular resistance is mediated by either the nptII gene in plant cells or the neo gene in mammalian systems, both of which produce an enzyme that modifies and inactivates G418. To establish optimal working conditions, it is needed to perform a kill curve to identify the minimum concentration required to eliminate non-resistant cells.

Storage

Store desiccated at -20°C, stable for 3 years.

Protocol

1. **Preparation of G418 stock solution**: Dissolve 1 g G418 per 20 mL of sterile H_2O to make a 50 mg/mL G418 stock solution. Then sterilize the stock solution with a 0.22 μm syringe filter. Aliquot and store the sterilized stock solution at -20°C, stable for 1 year.
2. **Recommended working concentration**:
    1) For mammalian cell selection, the recommended range is 300-1000 μg/mL. The commonly used concentration is 400 μg/mL.
    2) For mammalian cell maintenance: 200 μg/mL.
    3) For plant cell selection: 10-50 μg/mL.
    4) For plant cell maintenance: 10 μg/mL.
    5) For bacteria selection: 5-16 μg/mL.

***Note:** The optimal concentration depends on the cell type.

Note

1. For your safety and health, please wear lab coats and gloves during the experiment.
2. For research use only. Not to be used in clinical diagnostic or clinical trials.

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