

Puromycin dihydrochloride

Introduction

Puromycin is an aminonucleoside antibiotic that induces premature chain termination during translation. This mechanism effectively inhibits protein synthesis, making puromycin a valuable tool for both in vivo and in vitro studies.

Puromycin rapidly inhibits the growth of bacteria, protozoa, and mammalian cells. However, cells expressing the *pac* gene, which encodes a Puromycin N-acetyltransferase (PAC), are resistant. This enzyme inactivates puromycin by acetylation, preventing its interaction with the ribosome and conferring resistance. Although puromycin can be used to select resistant *E. coli* strains, it is more commonly employed for selecting mammalian cells.

Storage

Store desiccated at -20°C, stable for 2 years.

Protocol

- Preparation of stock solution:** Dissolve 20 mg Puromycin dihydrochloride in 2 mL of sterile H₂O (or other suitable buffer) to make a 10 mg/mL 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.
- Recommended working concentration:** For mammalian cell selection, the recommended concentration ranges from 1-10 µg/mL. In a new experiment, it is suggested to obtain optimal concentrations by a kill curve. Recommended working concentrations for selection in some cells are listed below.

Cell Line	Cancer Type	Recommended Concentration
A549	Lung cancer	1-2 µg/mL
B16	Mouse melanocytes	1-2 µg/mL
ES cell	Human embryonic stem cells	0.5-5 µg/mL
H1299	Non-small cell lung carcinoma	1-3 µg/mL
HEK293	Human embryonic kidney	0.5-3 µg/mL
HeLa	Human cervical cancer	1-2 µg/mL
HepG2	Human hepatocellular carcinoma	0.5-2 µg/mL
HT1080	Human fibrosarcoma	0.5-2 µg/mL
MCF-7	Human breast cancer	0.5-2 µg/mL
MDA-MB-231	Human breast cancer	0.5-5 µg/mL

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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