Revision 1

Store at -20C

#40939

Puromycin Dihydrochloride

50 mg

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Background

Puromycin Dihydrochloride is hydrochloride salt that is part of the antibiotic puromycin, originally isolated from the bacterium *Streptomyces alboniger*. The clinical use of puromycin as an antibiotic has been limited as it is non-selective and highly toxic. Instead, puromycin has been used to study mechanisms of protein synthesis as it associates with growing polypeptide chains and causes premature chain termination (1). The structure of puromycin is analogous to the 3' end of aminoacyl-tRNA, which allows puromycin to compete with aminoacyl-tRNA for binding at the A' site of the peptidyl transferase center during protein translation. Puromycin binding results in premature chain release from the ribosome and a truncated, puromycylated polypeptide (2). As these puromycylated nascent polypeptide chains can be detected using anti-puromycin antibodies, incorporation of puromycin into newly synthesized proteins has been used to estimate the rate and localization of protein synthesis (3). The use of puromycin labeling to estimate protein synthesis may be limited by cell conditions (e.g., energy starvation); similar limits are seen in studies using puromycin to localize areas of protein synthesis (4,5).

Molecular Formula

$C_{22}H_{29}N_7O_5 \cdot 2HCl$

Molecular Weight

544.4 g/mol

Purity

>98%

CAS

58-58-2

Solubility

Soluble in DMSO at 50 mg/mL or water at 50 mg/mL.

Storage

Store lyophilized at -20°C, desiccated. In lyophilized form, the chemical is stable for 24 months. Once in solution, store at -20°C and use within 1 month to prevent loss of potency. *Aliquot to avoid multiple freeze/thaw cycles*.

Directions for Use

Puromycin Dihydrochloride is supplied as a lyophilized powder. For a 10 mM stock, reconstitute 5 mg of powder in 0.92 mL of DMSO. Working concentrations and length of treatment can vary depending on the desired effect.

Background References

1. NATHANS, D. (1964) *Proc Natl Acad Sci U S A* 51, 585-92.
2. Aviner, R. (2020) *Comput Struct Biotechnol J* 18, 1074-1083.
3. Schmidt, E.K. et al. (2009) *Nat Methods* 6, 275-7.
4. Marciano, R. et al. (2018) *Cell Death Dis* 9, 39.
5. Enam, S.U. et al. (2020) *Elife* 9, e60303. doi: 10.7554/eLife.60303.

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