# Puromycin dihydrochloride

**Cat. No.:** HY-B1743A

**CAS No.:** 58-58-2

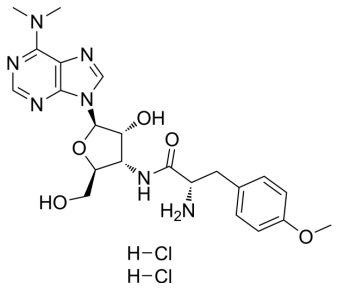
**Molecular Formula:** $C_{22}H_{31}Cl_2N_7O_5$

**Molecular Weight:** 544.43

**Target:** Bacterial; Antibiotic; Parasite

**Pathway:** Anti-infection

**Storage:** 4°C, sealed storage, away from moisture
* In solvent : -80°C, 1 year; -20°C, 6 months (sealed storage, away from moisture)




## SOLVENT & SOLUBILITY

**In Vitro**

Methanol : 250 mg/mL (459.20 mM; Need ultrasonic)
$H_2O$ : 50 mg/mL (91.84 mM; Need ultrasonic and warming)
DMSO : 50 mg/mL (91.84 mM; Need ultrasonic)
Ethanol : 5 mg/mL (9.18 mM; ultrasonic and warming and heat to 60°C)

**Preparing Stock Solutions**

| Concentration \ Solvent \ Mass | 1 mg | 5 mg | 10 mg |
|---|---|---|---|
| 1 mM | 1.8368 mL | 9.1839 mL | 18.3678 mL |
| 5 mM | 0.3674 mL | 1.8368 mL | 3.6736 mL |
| 10 mM | 0.1837 mL | 0.9184 mL | 1.8368 mL |

Please refer to the solubility information to select the appropriate solvent.

**In Vivo**

1. Add each solvent one by one: PBS
   Solubility: 100 mg/mL (183.68 mM); Clear solution; Need ultrasonic
2. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: ≥ 2.5 mg/mL (4.59 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 2.5 mg/mL (4.59 mM); Clear solution
4. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.5 mg/mL (4.59 mM); Clear solution
5. Add each solvent one by one: 10% EtOH >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 0.5 mg/mL (0.92 mM); Clear solution
6. Add each solvent one by one: 10% EtOH >> 90% corn oil
   Solubility: 0.5 mg/mL (0.92 mM); Suspended solution; Need ultrasonic

## BIOLOGICAL ACTIVITY

| | |
|---|---|
| **Description** | Puromycin dihydrochloride (CL13900 dihydrochloride), an aminonucleoside antibiotic, inhibits protein synthesis[1]. |
| **$IC_{50}$ & Target** | Aminoglycoside |
| **In Vitro** | Puromycin blocks protein synthesis after aminoacyl-sRNA formation, and at the same time it leads to the accumulation of small peptides. Both of these effects appear to be due to the splitting of ribosome-bound peptidyl-sRNA,4 which results in release of incomplete peptide chains.[1].<br>Puromycin, an analog of the 3' end of aminoacyl-tRNA, causes premature termination of translation by being linked non-specifically to growing polypeptide chains. Puromycin has two modes of inhibitory action. The first is by acting as an acceptor substrate which attacks peptidyl-tRNA in the P site to form a nascent peptide. The second is by competing with aminoacyl-tRNA for binding to the A' site[2].<br>When used in minimal amounts, puromycin incorporation in neosynthesized proteins reflects directly the rate of mRNA translation in vitro. Puromycin immunodetection is an advantageous alternative to radioactive amino acid labeling. It allows the direct evaluation of translation activity in single cells by immunofluorescence microscopy and in heterogenous populations of cells by fluorescenceactivated cell sorting[3].<br>MCE has not independently confirmed the accuracy of these methods. They are for reference only. |

## CUSTOMER VALIDATION

- Science. 2024 Feb 2;383(6682):eadh4859.
- Signal Transduct Target Ther. 2022 Feb 28;7(1):54.
- Mol Cancer. 2024 May 6;23(1):90.
- Mol Cancer. 2019 Aug 22;18(1):127.
- Adv Mater. 2022 Oct 20;e2206793.

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## REFERENCES

[1]. Nathans D, et al. Puromycin inhibition of protein synthesis: incorporation of puromycin intopeptide chains. Proc Natl Acad Sci U S A. 1964 Apr;51:585-92.

[2]. Miyamoto-Sato E, et al. Specific bonding of puromycin to full-length protein at the C-terminus. Nucleic Acids Res. 2000 Mar 1;28(5):1176-82.

[3]. Schmidt EK, et al. SUnSET, a nonradioactive method to monitor protein synthesis. Nat Methods. 2009 Apr;6(4):275-7.



Tel: 609-228-6898 Fax: 609-228-5909 E-mail: tech@MedChemExpress.com

Address: 1 Deer Park Dr, Suite Q, Monmouth Junction, NJ 08852, USA