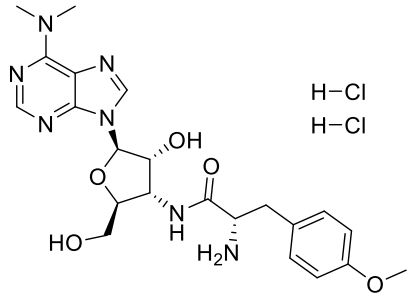
Product data sheet

MedKoo Cat#: 561474 Name: Puromycin Dihydrochloride CAS#: 58-58-2 Chemical Formula: $C_{22}H_{31}Cl_2N_7O_5$ Molecular Weight: 544.43	
Product supplied as:	Powder
Purity (by HPLC):	≥ 98%
Shipping conditions	Ambient temperature
Storage conditions:	Powder: -20°C 3 years; 4°C 2 years.
	In solvent: -80°C 3 months; -20°C 2 weeks.

1. Product description:
Puromycin Dihydrochloride is an antibiotic. It inhibits protein synthesis by binding to RNA. Puromycin Dihydrochloride has antimicrobial, antitrypanosomal, and antineoplastic properties.

2. CoA, QC data, SDS, and handling instruction
SDS and handling instruction, CoA with copies of QC data (NMR, HPLC and MS analytical spectra) can be downloaded from the product web page under "QC And Documents" section. Note: copies of analytical spectra may not be available if the product is being supplied by MedKoo partners. Whether the product was made by MedKoo or provided by its partners, the quality is 100% guaranteed.

3. Solubility data

Solvent	Max Conc. mg/mL	Max Conc. mM
DMSO	50	91.84
Ethanol	5	9.18
Methanol	250	459.20
Water	50	91.84

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	1.84 mL	9.18 mL	18.37 mL
5 mM	0.37 mL	1.84 mL	3.67 mL
10 mM	0.18 mL	0.92 mL	1.84 mL
50 mM	0.04 mL	0.18 mL	0.37 mL

5. Molarity Calculator, Reconstitution Calculator, Dilution Calculator
Please refer the product web page under section of "Calculator"

6. Recommended literature which reported protocols for in vitro and in vivo study
In vitro study

1. Li Y, Sui X, Hu X, Hu Z. Overexpression of KLF5 inhibits puromycin-induced apoptosis of podocytes. Mol Med Rep. 2018 Oct;18(4):3843-3849. doi: 10.3892/mmr.2018.9366. Epub 2018 Aug 9. PMID: 30106142; PMCID: PMC6131625.
2. Hernández-Damián J, Tecalco-Cruz AC, Ríos-López DG, Vázquez-Victorio G, Vázquez-Macías A, Caligaris C, Sosa-Garrocho M, Flores-Pérez B, Romero-Avila M, Macías-Silva M. Downregulation of SnoN oncoprotein induced by antibiotics anisomycin and puromycin positively regulates transforming growth factor-β signals. Biochim Biophys Acta. 2013 Nov;1830(11):5049-58. doi: 10.1016/j.bbagen.2013.07.006. Epub 2013 Jul 18. PMID: 23872350.

In vivo study

1. Koun S, Park HJ, Jung SM, Cha JJ, Cha DR, Kang YS. Puromycin-induced kidney injury and subsequent regeneration in adult zebrafish. Anim Cells Syst (Seoul). 2023 Apr 20;27(1):112-119. doi: 10.1080/19768354.2023.2203211. PMID: 37089626; PMCID: PMC10120544.
2. Sakamoto H, Hirakawa Y, Ishida KI, Keeling PJ, Kita K, Matsuzaki M. Puromycin selection for stable transfectants of the oyster-infecting parasite Perkinsus marinus. Parasitol Int. 2019 Apr;69:13-16. doi: 10.1016/j.parint.2018.10.011. Epub 2018 Oct 30. PMID: 30389616.

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7. Bioactivity

Biological target:

Puromycin inhibits protein synthesis by binding to RNA. It is an antineoplastic and antitrypanosomal agent and is used in research as an inhibitor of protein synthesis. It also serves an an anticancer drug by suppressing the growth and metastasis in esophagus cancer cells by Akt phosphorylation.

In vitro activity

The effects of Puromycin aminonucleoside (PAN) were investigated on podocytes in the context of diabetic nephropathy. PAN treatment had a dose- and time-dependent inhibitory effect on podocyte proliferation, suggesting its role in suppressing cell growth. KLF5 overexpression induced cell cycle arrest in podocytes when regulated by PAN. KLF5 overexpression was shown to inhibit PAN-induced apoptosis of podocyte.

Reference: Mol Med Rep. 2018 Oct;18(4):3843-3849. https://pubmed.ncbi.nlm.nih.gov/30106142/

In vivo activity

In adult zebrafish, puromycin administration led to kidney injury, causing rapid clearance of substances from the kidney and resulting in morphological changes in the kidney structure, which recovered over time. During the process of nephron injury and regeneration, various molecular markers associated with kidney injury and repair showed significant changes, including increased expression of renal progenitor marker lhx1a and upregulation of NFκB, TNFα, Nampt, and p-ERK.

Reference: Anim Cells Syst (Seoul). 2023 Apr 20;27(1):112-119. https://pubmed.ncbi.nlm.nih.gov/37089626/

Note: The information listed here was extracted from literature. MedKoo has not independently retested and confirmed the accuracy of these methods. Customer should use it just for a reference only.