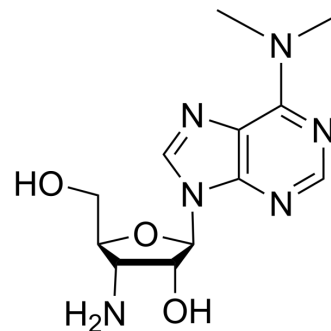


Puromycin aminonucleoside

Cat. No.:	HY-15695		
CAS No.:	58-60-6		
Molecular Formula:	C ₁₂ H ₁₈ N ₆ O ₃		
Molecular Weight:	294.31		
Target:	Bacterial; Apoptosis; Dipeptidyl Peptidase; Aminopeptidase; Antibiotic		
Pathway:	Anti-infection; Apoptosis; Metabolic Enzyme/Protease		
Storage:	Powder	-20°C	3 years
		4°C	2 years
	In solvent	-80°C	6 months
		-20°C	1 month



SOLVENT & SOLUBILITY

In Vitro

H₂O : 40 mg/mL (135.91 mM; ultrasonic and warming and heat to 50°C)
 DMSO : 25 mg/mL (84.94 mM; ultrasonic and warming and heat to 60°C)

	Solvent Concentration	Mass		
		1 mg	5 mg	10 mg
Preparing Stock Solutions	1 mM	3.3978 mL	16.9889 mL	33.9778 mL
	5 mM	0.6796 mL	3.3978 mL	6.7956 mL
	10 mM	0.3398 mL	1.6989 mL	3.3978 mL

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

In Vivo

- Add each solvent one by one: PBS
Solubility: 12.5 mg/mL (42.47 mM); Clear solution; Need ultrasonic
- Add each solvent one by one: 5% DMSO >> 40% PEG300 >> 5% Tween-80 >> 50% saline
Solubility: ≥ 2.5 mg/mL (8.49 mM); Clear solution
- Add each solvent one by one: 5% DMSO >> 95% (20% SBE-β-CD in saline)
Solubility: ≥ 2.5 mg/mL (8.49 mM); Clear solution
- Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
Solubility: ≥ 2.08 mg/mL (7.07 mM); Clear solution
- Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
Solubility: ≥ 2.08 mg/mL (7.07 mM); Clear solution
- Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
Solubility: ≥ 2.08 mg/mL (7.07 mM); Clear solution
- Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
Solubility: ≥ 2.08 mg/mL (7.07 mM); Clear solution
- Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
Solubility: ≥ 2.08 mg/mL (7.07 mM); Clear solution

9. Add each solvent one by one: 10% DMSO >> 90% corn oil
Solubility: ≥ 2.08 mg/mL (7.07 mM); Clear solution
10. Add each solvent one by one: 10% DMSO >> 90% corn oil
Solubility: ≥ 2.08 mg/mL (7.07 mM); Clear solution

BIOLOGICAL ACTIVITY

Description	Puromycin aminonucleoside (NSC 3056) is the aminonucleoside portion of the antibiotic puromycin, and used in nephrosis animal models ^[1] . Puromycin aminonucleoside induces apoptosis ^[2] . Puromycin aminonucleoside is a reversible inhibitor of dipeptidyl peptidase II and cytosol alanine aminopeptidase ^[3] . Puromycin aminonucleoside induces secretion of cell migrasome ^[4] .
IC₅₀ & Target	DPP-2
In Vitro	Puromycin aminonucleoside (NSC 3056) (30 μ g/mL) markedly increases p53 protein levels in podocytes. Puromycin aminonucleoside (NSC 3056)-induced podocyte apoptosis is p53 dependent. Puromycin aminonucleoside (NSC 3056) induces podocyte apoptosis in a time-dependent manner ^[2] . The IC ₅₀ values for PMAT-expressing and vector-transfected cells are 48.9 and 122.1 μ M, respectively, suggesting expression of PMAT-enhanced cell sensitivity to Puromycin aminonucleoside. Puromycin aminonucleoside (NSC 3056) (250 μ M) is toxic to both PMAT-expressing and vector-transfected cells. Puromycin aminonucleoside (NSC 3056) uptake in PMAT-expressing cells is fourfold higher at pH 6.6 than that at pH 7.4 ^[5] . MCE has not independently confirmed the accuracy of these methods. They are for reference only.
In Vivo	The number of podocytes per glomerulus is 95.5 \pm 17.6 in the control rats, 90.7 on Day 4 in Puromycin aminonucleoside (NSC 3056) (8 mg/100 g, i.v.)-treated nephrosis rats. The amount of nephrin per glomerulus in control rats is 1.02 \pm 0.11 fmol and those in Puromycin aminonucleoside (NSC 3056) nephrosis rats are reduced to 0.46 \pm 0.06 fmol and 0.35 \pm 0.04 fmol on Day 4 and Day 7. The nephrin amount per podocyte is significantly decreased association with the development of proteinuria in Puromycin aminonucleoside (NSC 3056) nephrosis rats ^[5] . Rats given Puromycin aminonucleoside (NSC 3056) (100 mg/kg, s.c.) gain less weight and their serum creatinine levels are higher than the control rats ^[7] . MCE has not independently confirmed the accuracy of these methods. They are for reference only.

PROTOCOL

Cell Assay ^[4]	Cells are seeded in MEM with 10% FBS on 96-well plates at a density of 5,000 cells/well. After approx 48-h incubation (approx 40-50% confluence), cells are changed to fresh growth medium containing Puromycin aminonucleoside (NSC 3056) at various concentrations. For the protection experiment, cells are incubated in medium containing 250 μ M Puromycin aminonucleoside (NSC 3056) with or without the PMAT inhibitor decynium-22 (2 μ M). After a total of 72-h incubation in a 95% O ₂ incubator at 37°C, cells are washed and the plates. The IC ₅₀ values are determined by fitting the cell growth data to the following model using nonlinear regression (WinNonLin version 3.2): $S = S_{max} - [S_{max} - S_0] \times [C_{\gamma} / (C_{\gamma} + IC_{50\gamma})]$, where S is the cell survival expressed as percentage of the optical density to untreated control cells, S _{max} is the maximal cell survival, S ₀ is the lowest residual cell survival at the high drug concentration, C is Puromycin aminonucleoside concentration, γ is the Hill coefficient, and IC ₅₀ is the Puromycin aminonucleoside concentration leading to half-maximal cell survival. Five to six determinations are carried out within each experiment, and four independent experiments are performed. MCE has not independently confirmed the accuracy of these methods. They are for reference only.
Animal Administration ^[5]	Male F344 rats at 11 weeks of age are purchased from JaPuromycin aminonucleoside SLC. Normal rats and a Puromycin aminonucleoside nephrosis model are used in the present study. Puromycin aminonucleoside (NSC 3056) nephrosis is induced in rats by a single intravenous injection of Puromycin aminonucleoside at a dose of 8 mg/100 g body weight in saline. Control animals receive an identical volume of saline. Nephrotic rats (n=6 per group) are studied at Days 4 and 7 after

the Puromycin aminonucleoside injection.

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

CUSTOMER VALIDATION

- Adv Sci (Weinh). 2021 Jan 6;8(5):2002738.
- Pharmacol Res. 2022 Aug;182:106285.
- Cell Death Dis. 2023 Jan 26;14(1):62.
- J Pharm Anal. 2023 Apr 11.
- Cell Prolif. 2023 Aug 17;e13534.

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- [2]. Wada T, et al. Prevents podocyte apoptosis induced by puromycin aminonucleoside: role of p53 and Bcl-2-related family proteins. *J Am Soc Nephrol*. 2005 Sep;16(9):2615-25.
- [3]. Xia L, et al. Podocyte-specific expression of organic cation transporter PMAT: implication in puromycin aminonucleosideneurotoxicity. *Am J Physiol Renal Physiol*. 2009 Jun;296(6):F1307-13.
- [4]. Kawakami H, et al. Dynamics of absolute amount of nephrin in a single podocyte in puromycin aminonucleoside nephrosis rats calculated by quantitative glomerular proteomics approach with selected reaction monitoring mode. *Nephrol Dial Transplant*. 2012 Apr;
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- [6]. Lacalle RA, et al. Cloning of the complete biosynthetic gene cluster for an aminonucleoside antibiotic, puromycin, and its regulated expression in heterologous hosts. *EMBO J*. 1992 Feb;11(2):785-92.
- [7]. Gong W, et al. Estrogen-related receptor- α mediates puromycin aminonucleoside-induced mesangial cell apoptosis and inflammatory injury. *Am J Physiol Renal Physiol*. 2019 May 1;316(5):F906-F913.

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