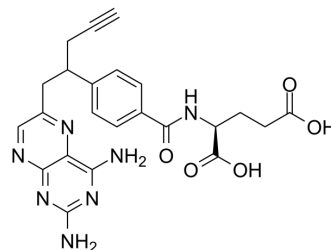


Pralatrexate

Cat. No.:	HY-10446		
CAS No.:	146464-95-1		
Molecular Formula:	C ₂₃ H ₂₃ N ₇ O ₅		
Molecular Weight:	477.47		
Target:	Antifolate; Apoptosis		
Pathway:	Cell Cycle/DNA Damage; Apoptosis		
Storage:	Powder	-20°C	3 years
		4°C	2 years
	In solvent	-80°C	2 years
		-20°C	1 year



SOLVENT & SOLUBILITY

In Vitro

DMSO : ≥ 50 mg/mL (104.72 mM)
 * "≥" means soluble, but saturation unknown.

Concentration	Mass		
	1 mg	5 mg	10 mg
1 mM	2.0944 mL	10.4719 mL	20.9437 mL
5 mM	0.4189 mL	2.0944 mL	4.1887 mL
10 mM	0.2094 mL	1.0472 mL	2.0944 mL

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

In Vivo

- Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
 Solubility: ≥ 2.5 mg/mL (5.24 mM); Clear solution
- Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
 Solubility: ≥ 2.5 mg/mL (5.24 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Pralatrexate is an antifolate and is a potent dihydrofolate reductase (DHFR) inhibitor with a K_i of 13.4 pM. Pralatrexate is a substrate for polyglutamate synthetase with improved cellular uptake and retention. Pralatrexate has antitumor activities and has the potential for relapsed/refractory T-cell lymphoma treatment^{[1][2][3][4]}. Pralatrexate is a click chemistry reagent, it contains an Alkyne group and can undergo copper-catalyzed azide-alkyne cycloaddition (CuAAC) with molecules containing Azide groups.

IC₅₀ & Target

Ki: 13.4 pM (Dihydrofolate reductase (DHFR))^[4]

In Vitro

Pralatrexate (100 pM-200 μM; 48-72 hours; T-lymphoma cell lines) treatment exhibits concentration- and time-dependent

cytotoxicity against a broad panel of T-lymphoma cell lines. The IC₅₀ values at 48 and 72 hours, respectively, are as follows: H9 cells, 1.1 nM and 2.5 nM; P12 cells, 1.7 nM and 2.4 nM; CEM cells, 3.2 nM and 4.2 nM; PF-382 cells, 5.5 nM and 2.7 nM; KOPT-K1 cells, 1 nM and 1.7 nM; DND-41 cells, 97.4 nM and 1.2 nM; and HPB-ALL cells, 247.8 nM and 0.77 nM. HH cells are relatively resistant after 48 hours of exposure, with the IC₅₀ at 72 hours being 2.8 nM^[1].

Pralatrexate (2-5.5 nM; 48-72 hours; H9, HH, P12 and PF382 cells) treatment induces potent apoptosis, and caspase-8 and caspase-9 activation^[1].

Pralatrexate (3 nM; 16-48 hours; H9 and P12 cells) treatment clearly increases p27 levels and increases the accumulation of reduced folate carrier type 1 (RFC-1) in cells^[1].

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

Cell Cytotoxicity Assay^[1]

Cell Line:	T-lymphoma cell lines
Concentration:	100 pM-200 μM
Incubation Time:	48 hours, 72 hours
Result:	Exhibited concentration- and time-dependent cytotoxicity against a broad panel of T-lymphoma cell lines.

Apoptosis Analysis^[1]

Cell Line:	H9, HH, P12 and PF382 cells
Concentration:	2 nM, 3 nM, 4 nM, 5.5 nM
Incubation Time:	48 hours, 72 hours
Result:	Induced potent apoptosis and caspase activation.

Western Blot Analysis^[1]

Cell Line:	H9 and P12 cells
Concentration:	3 nM
Incubation Time:	16 hours, 24 hours, 48 hours
Result:	Clearly increased p27 levels and increased the accumulation of RFC-1 in cells.

In Vivo

The addition of Pralatrexate (15 mg/kg; intraperitoneal injection; on days 1, 4, 8, and 11; SCID-beige mice) to Bortezomib (0.5 mg/kg) enhanced efficacy compared with either drug alone^[1].

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

Animal Model:	SCID-beige mice (5-7-week-old) injected with HH cells ^[1]
Dosage:	15 mg/kg
Administration:	Intraperitoneal injection; on days 1, 4, 8, and 11
Result:	Showed superior efficacy in T-cell malignancies.

- Antiviral Res. 2023 Dec 23, 105787.
- Cancers (Basel). 2022 May 20;14(10):2527.
- J Mol Med (Berl). 2019 Aug;97(8):1183-1193.
- Dis Model Mech. 2023 Mar 2;dmm.049769.

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- [2]. Francine Foss, et al. Pralatrexate Is an Effective Treatment for Relapsed or Refractory Transformed Mycosis Fungoides: A Subgroup Efficacy Analysis From the PROPEL Study. Clin Lymphoma Myeloma Leuk. 2012 Aug;12(4):238-43.
- [3]. Karen Kelly, et al. Randomized Phase 2b Study of Pralatrexate Versus Erlotinib in Patients With Stage IIIB/IV Non-Small-Cell Lung Cancer (NSCLC) After Failure of Prior Platinum-Based Therapy. J Thorac Oncol. 2012 Jun;7(6):1041-8.
- [4]. F M Sirotnak, et al. A New Analogue of 10-deazaaminopterin With Markedly Enhanced Curative Effects Against Human Tumor Xenografts in Mice. Cancer Chemother Pharmacol. 1998;42(4):313-8.
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Caution: Product has not been fully validated for medical applications. For research use only.

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