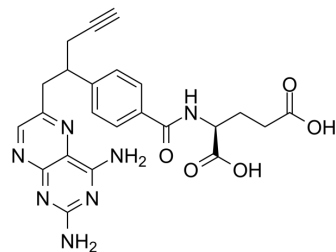


Pralatrexate

| | | | |
|---------------------------|---|-------|---------|
| 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

K_i: 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.
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