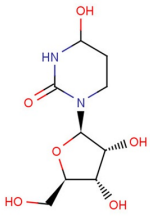
Data Sheet (Cat.No.T17059)

TargetMol
A DRUG SCREENING EXPERT

Tetrahydrouridine

Chemical Properties



CAS No.:	18771-50-1
Formula:	C9H16N2O6
Molecular Weight:	248.24
Appearance:	N/A
Storage:	0-4℃ for short term (days to weeks), or -20℃ for long term (months).

Biological Description

Description	Tetrahydrouridine is a competitive cytidine deaminase inhibitor and multidrug resistance modulator. It makes tumor cells more sensitive to radiation therapy making it useful for cancer treatment.
Targets(IC_{50})	cytidine deaminase (CDA): None
In vitro	Tetrahydrouridine is a specific inhibitor of cytidine deaminase which can suppress delamination in the catabolism of cytotoxic deoxycytidine analogs like ara-C and Gemcitabine. Tetrahydrouridine inhibits S-phase without apoptosis. High CDA expression in BxPC-3 and H441 causes improved Gemcitabine sensitivity after a 100 μM Tetrahydrouridine treatment. The sensitivity of BxPC-3 and H441 cell lines increases by as much as approximately 2.1 and 4.4 fold respectively. MIAPaCa-2 and H1299 cells unexpectedly become more sensitive to Gemcitabine with low CDA expression. MIAPaCa-2 and H1299 cells show a change (IC50: 2.2 and 2.3 fold respectively). However, Panc-1 and H322 cells do not show significant changes in drug sensitivity. These data suggested that Tetrahydrouridine can sensitize some pancreatic and lung carcinoma cells to Gemcitabine-induced cell death regardless of CDA expression levels [1].
In vivo	Administration of Tetrahydrouridine (167 mg/kg) followed by DAC (1.0 mg/kg) causes death in one male and eight females. Animals surviving to scheduled termination are generally asymptomatic with no treatment-related effects observed in body weights, food consumption, clinical chemistry, and urinalysis for a treatment up to DAC (1.0 mg/kg) in combination with Tetrahydrouridine (167 mg/kg) in animals [2].

Solubility Information

Solubility	Water: Insoluble DMSO: Soluble (< 1 mg/ml refers to the product slightly soluble or insoluble)

Preparing Stock Solutions

	1mg	5mg	10mg
1 mM	4.028 mL	20.142 mL	40.284 mL
5 mM	0.806 mL	4.028 mL	8.057 mL
10 mM	0.403 mL	2.014 mL	4.028 mL
50 mM	0.081 mL	0.403 mL	0.806 mL

Please select the appropriate solvent to prepare the stock solution, according to the solubility of the product in different solvents. The storage conditions and period of the stock solution: - 80 ℃ for 6 months; - 20 ℃ for 1 month. Please use it as soon as possible.

Reference

1. Morfouace M, Nimmervoll B, Boulos N, Patel YT, Shelat A, Freeman BB 3rd, Robinson GW, Wright K, Gajjar A, Stewart CF, Gilbertson RJ, Roussel MF. Preclinical studies of 5-fluoro-2'-deoxycytidine and tetrahydrouridine in pediatric brain tumors. J Neurooncol. 2015 Oct 30. [Epub ahead of print] PubMed PMID: 26518542.

2. Mano Y, Sakamaki K, Ueno T, Kita K, Ishii T, Hotta K, Kusano K. Validation of a hydrophilic interaction ultra-performance liquid chromatography-tandem mass spectrometry method for the determination of gemcitabine in human plasma with tetrahydrouridine. Biomed Chromatogr. 2015 Sep;29(9):1343-9. doi: 10.1002/bmc.3429. Epub 2015 Feb 2. PubMed PMID: 25641274.

3. Newman EM, Morgan RJ, Kummar S, Beumer JH, Blanchard MS, Ruel C, El-Khoueiry AB, Carroll MI, Hou JM, Li C, Lenz HJ, Eiseman JL, Doroshow JH. A phase I, pharmacokinetic, and pharmacodynamic evaluation of the DNA methyltransferase inhibitor 5-fluoro-2'-deoxycytidine, administered with tetrahydrouridine. Cancer Chemother Pharmacol. 2015 Mar;75(3):537-46. doi: 10.1007/s00280-014-2674-7. Epub 2015 Jan 8. PubMed PMID: 25567350; PubMed Central PMCID: PMC4344391.

4. Terse P, Engelke K, Chan K, Ling Y, Sharpnack D, Saunthararajah Y, Covey JM. Subchronic oral toxicity study of decitabine in combination with tetrahydrouridine in CD-1 mice. Int J Toxicol. 2014 Mar-Apr;33(2):75-85. doi: 10.1177/1091581814524994. Epub 2014 Mar 17. PubMed PMID: 24639139; PubMed Central PMCID: PMC4001115.

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