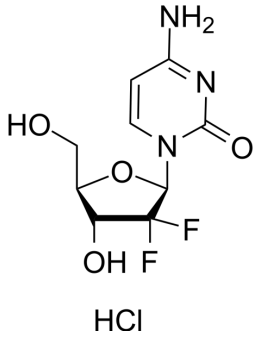
Gemcitabine hydrochloride

Cat. No.:	HY-B0003
CAS No.:	122111-03-9
Molecular Formula:	$C_9H_{12}ClF_2N_3O_4$
Molecular Weight:	299.66
Target:	DNA/RNA Synthesis; Nucleoside Antimetabolite/Analog; Autophagy; Apoptosis
Pathway:	Cell Cycle/DNA Damage; Autophagy; Apoptosis
Storage:	4°C, sealed storage, away from moisture and light * In solvent : -80°C, 1 year; -20°C, 6 months (sealed storage, away from moisture and light)



SOLVENT & SOLUBILITY

In Vitro

DMSO : 62.5 mg/mL (208.57 mM; ultrasonic and warming and heat to 60°C)
H_2O : 25 mg/mL (83.43 mM; Need ultrasonic)
DMF : 2.5 mg/mL (8.34 mM; Need ultrasonic)

Preparing Stock Solutions

Solvent / Mass / Concentration	1 mg	5 mg	10 mg
1 mM	3.3371 mL	16.6856 mL	33.3712 mL
5 mM	0.6674 mL	3.3371 mL	6.6742 mL
10 mM	0.3337 mL	1.6686 mL	3.3371 mL

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

In Vivo

1. Add each solvent one by one: PBS
   Solubility: 25 mg/mL (83.43 mM); Clear solution; Need ultrasonic
2. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: ≥ 2.08 mg/mL (6.94 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 2.08 mg/mL (6.94 mM); Clear solution
4. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.08 mg/mL (6.94 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Gemcitabine Hydrochloride (LY 188011 Hydrochloride) is a pyrimidine nucleoside analog antimetabolite and an antineoplastic agent. Gemcitabine Hydrochloride inhibits DNA synthesis and repair, resulting in autophagyand apoptosis[1] [2].

IC_{50} & Target	DNA synthesis[1]
In Vitro	Gemcitabine Hydrochloride (purchased from MedChem Express, 0.003-1 μM; 3 days) kills both mouse and human senescent cells effectively and potently[4]. Gemcitabine Hydrochloride inhibits the growth of BxPC-3, Mia Paca-2, PANC-1, PL-45 and AsPC-1 cells with IC_{50}s of 37.6, 42.9, 92.7, 89.3 and 131.4 nM, respectively[1]. MCE has not independently confirmed the accuracy of these methods. They are for reference only. Cell Viability Assay[4]

Cell Line:	Non-senescent and replication-induced senescent new born dermal fibroblasts (NBFs)
Concentration:	0.003, 0.01, 0.03, 0.1, 0.3, 1 μM
Incubation Time:	3 days
Result:	Killed replication-induced senescent NBFs for 3 days with 11.0% cell viability.

In Vivo	Gemcitabine Hydrochloride can be administered via endotracheal spray in rats without marked toxicity with a maximum tolerated dose of 4 mg/kg once a week for 9 weeks. The toxicity of Gemcitabine is lower via lung than oral administration at dosages of 2, 4, and 6 mg/kg[2]. Treatment of the LSL-$Kras^{G12D/+}$; LSL-$Trp53^{R172H}$; Pdx-1-Cre mice with either Gemcitabine (50 mg/kg, i.p.) or the combination DMAPT/Gemcitabine Hydrochloride significantly increases the median survival time by more than 30 days compared to the placebo group (254.5 or 255 days vs. 217.5 days, respectively)[3]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

CUSTOMER VALIDATION

- Nat Med. 2024 Mar;30(3):749-761.
- Nature. 2019 Oct;574(7777):264-267.
- Cell Res. 2020 Jul;30(7):574-589.
- Mol Cancer. 2023 Dec 4;22(1):195.
- Gastroenterology. 2021 Nov;161(5):1601-1614.e23.

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REFERENCES

[1]. Wang H, et al. Enhanced efficacy of Gemcitabine by indole-3-carbinol in pancreatic cell lines: the role of human equilibrativenucleoside transporter 1. Anticancer Res. 2011 Oct;31(10):3171-80

[2]. Gagnadoux F, et al. Safety of pulmonary administration of gemcitabine in rats. J Aerosol Med. 2005 Summer;18(2):198-206

[3]. Lou M, et al. Physical interaction between human ribonucleotide reductase large subunit and thioredoxin increases colorectal cancer malignancy. J Biol Chem. 2017 Jun 2;292(22):9136-9149.

[4]. Yip-Schneider MT, et al. Dimethylaminoparthenolide and Gemcitabine: a survival study using a genetically engineered mouse model of pancreatic cancer. BMC Cancer. 2013 Apr 17;13:194.

Caution: Product has not been fully validated for medical applications. For research use only.

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