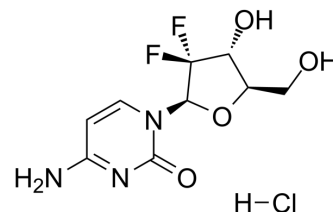


Gemcitabine hydrochloride

Cat. No.:	HY-B0003
CAS No.:	122111-03-9
Molecular Formula:	C ₉ H ₁₂ ClF ₂ N ₃ O 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, 6 months; -20°C, 1 month (sealed storage, away from moisture and light)



SOLVENT & SOLUBILITY

In Vitro

H₂O : ≥ 66.66 mg/mL (222.45 mM)
 DMSO : 25 mg/mL (83.43 mM; ultrasonic and warming and heat to 60°C)
 DMF : 2.5 mg/mL (8.34 mM; Need ultrasonic)
 * "≥" means soluble, but saturation unknown.

Preparing Stock Solutions	Solvent Concentration	Mass		
		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

- Add each solvent one by one: PBS
Solubility: 60 mg/mL (200.23 mM); Clear solution; Need ultrasonic
- 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
- 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
- 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 autophagy and apoptosis^[1] [2].

IC₅₀ & Target	DNA synthesis ^[1]								
In Vitro	<p>Gemcitabine Hydrochloride (purchased from MedChem Express, 0.003-1 μM; 3 days) kills both mouse and human senescent cells effectively and potently^[4].</p> <p>Gemcitabine Hydrochloride inhibits the growth of BxPC-3, Mia Paca-2, PANC-1, PL-45 and AsPC-1 cells with IC₅₀s of 37.6, 42.9, 92.7, 89.3 and 131.4 nM, respectively^[1].</p> <p>MCE has not independently confirmed the accuracy of these methods. They are for reference only.</p> <p>Cell Viability Assay^[4]</p> <table border="1"> <tr> <td>Cell Line:</td> <td>Non-senescent and replication-induced senescent new born dermal fibroblasts (NBFs)</td> </tr> <tr> <td>Concentration:</td> <td>0.003, 0.01, 0.03, 0.1, 0.3, 1 μM</td> </tr> <tr> <td>Incubation Time:</td> <td>3 days</td> </tr> <tr> <td>Result:</td> <td>Killed replication-induced senescent NBFs for 3 days with 11.0% cell viability.</td> </tr> </table>	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.
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	<p>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].</p> <p>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].</p> <p>MCE has not independently confirmed the accuracy of these methods. They are for reference only.</p>								

CUSTOMER VALIDATION

- Nature. 2019 Oct;574(7777):264-267.
- Adv Mater. 2021 May;33(18):e2100949.
- Cell Res. 2020 Jul;30(7):574-589.
- Gastroenterology. 2021 Nov;161(5):1601-1614.e23.
- Sci Transl Med. 2021 Jan 20;13(577):eaba7401.

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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 equilibrative nucleoside 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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