Irinotecan hydrochloride

Cat. No.: HY-16562A

CAS No.: 100286-90-6

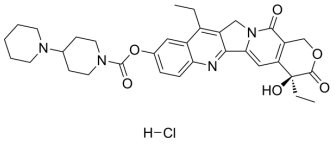
Molecular Formula: $C_{33}H_{39}ClN_4O_6$

Molecular Weight: 623.14

Target: Topoisomerase; Autophagy

Pathway: Cell Cycle/DNA Damage; Autophagy

Storage: 4°C, sealed storage, away from moisture
* In solvent : -80°C, 6 months; -20°C, 1 month (sealed storage, away from moisture)



SOLVENT & SOLUBILITY

In Vitro

DMSO : 125 mg/mL (200.60 mM; Need ultrasonic)
H_2O : 3.33 mg/mL (5.34 mM; Need ultrasonic)

Preparing Stock Solutions

Solvent / Mass / Concentration	1 mg	5 mg	10 mg
1 mM	1.6048 mL	8.0239 mL	16.0478 mL
5 mM	0.3210 mL	1.6048 mL	3.2096 mL
10 mM	0.1605 mL	0.8024 mL	1.6048 mL

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

In Vivo

1. Add each solvent one by one: 0.5% CMC-Na/saline water
   Solubility: 10 mg/mL (16.05 mM); Suspended solution; Need ultrasonic
2. Add each solvent one by one: 50% PEG300 >> 50% saline
   Solubility: 10 mg/mL (16.05 mM); Suspended solution; Need ultrasonic
3. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: ≥ 2.08 mg/mL (3.34 mM); Clear solution
4. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 2.08 mg/mL (3.34 mM); Clear solution
5. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.08 mg/mL (3.34 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Irinotecan hydrochloride ((+)-Irinotecan hydrochloride) is a topoisomerase I inhibitor mainly used to treat colon cancer and rectal cancer[1].

IC_{50} & Target	Topoisomerase I
In Vitro	Irinotecan hydrochloride is a topoisomerase I inhibitor. Irinotecan inhibits the growth of LoVo and HT-29 cells, with IC_{50}s of 15.8 ± 5.1 and 5.17 ± 1.4 μM, respectively, and induces similar amounts of cleavable complexes in both in LoVo and HT-29 cells[2]. Irinotecan suppresses the proliferation of human umbilical vein endothelial cells (HUVEC), with an IC_{50} of 1.3 μM[3]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.
In Vivo	Irinotecan hydrochloride (CPT-11 hydrochloride, 5 mg/kg) significantly inhibits the growth of tumors by intratumoral injection daily for 5 days, on two consecutive weeks in rats, and such effects also occur via continuous intraperitoneal infusion by osmotic minipump into mice. However, Irinotecan (10 mg/kg) shows no effect on the growth of tumor by i.p[1]. Irinotecan (CPT-11, 100-300 mg/kg, i.p.) apparently suppresses tumor growth of HT-29 xenografts in athymic female mice by day 21. The two groups of Irinotecan (125 mg/kg) plus TSP-1 (10 mg/kg per day) or Irinotecan (150 mg/kg) in combination TSP-1 (20 mg/kg per day) are nearly equally effective and inhibit tumor growth 84% and 89%, respectively, and both are more effective than Irinotecan alone at doses of 250 and 300 mg/kg[3]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

PROTOCOL

Cell Assay [2]	Exponentially growing cells are seeded in 20 cm^2 dishes with an optimal cell number for each cell line (20,000 for LoVo cells, 100,000 for HT-29 cells). They are treated 2 days later with increasing concentrations of irinotecan or SN-38 for one cell doubling time (24 h for LoVo cells, 40 h for HT-29 cells). After washing with 0.15 M NaCl, the cells are further grown for two doubling times in normal medium, detached from the support with trypsin-EDTA and counted in a hemocytometer. The IC_{50} values are then estimated as the drug concentrations responsible for 50% growth inhibition as compared with cells incubated without drug[2]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.
Animal Administration [1]	Irinotecan has been administered by intratumoral injection at 0.1 cc volume of the appropriate solution, for a doses of 5 mg/kg daily for 5 days, on two consecutive weeks, followed by a 7-days rest period, referred to as one cycle of therapy. Rats receive three cycles over a period of 8 weeks. Control animals receive 0.1 cc of sterile 0.9% sodium chloride solution by intratumoral injection in the same rule of administration as that of animals of group II[1]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

CUSTOMER VALIDATION

- Cell. 2022 Sep 1;185(18):3356-3374.e22.
- Signal Transduct Target Ther. 2021 May 28;6(1):188.
- Cell Discov. 2022 Sep 14;8(1):92.
- Gastroenterology. 2021 Nov;161(5):1601-1614.e23.
- Acta Pharm Sin B. 2023 Dec 30.

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REFERENCES

[1]. Morales C, et al. Antitumoral effect of irinotecan (CPT-11) on an experimental model of malignant neuroectodermal tumor. J Neurooncol. 2002 Feb;56(3):219-26.

[2]. Pavillard V, et al. Determinants of the cytotoxicity of irinotecan in two human colorectal tumor cell lines. Cancer Chemother Pharmacol. 2002 Apr;49(4):329-35. Epub 2002 Jan 30.

[3]. Allegrini G, et al. Thrombospondin-1 plus irinotecan: a novel antiangiogenic-chemotherapeutic combination that inhibits the growth of advanced human colon tumor xenografts in mice. Cancer Chemother Pharmacol. 2004 Mar;53(3):261-6. Epub 2003 Dec 5.

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