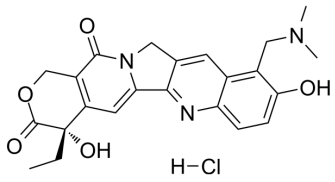
Topotecan hydrochloride

Cat. No.:	HY-13768A
CAS No.:	119413-54-6
Molecular Formula:	$C_{23}H_{24}ClN_3O_5$
Molecular Weight:	457.91
Target:	Topoisomerase; Autophagy; Apoptosis
Pathway:	Cell Cycle/DNA Damage; Autophagy; Apoptosis
Storage:	4°C, sealed storage, away from moisture and light * In solvent : -80°C, 2 years; -20°C, 1 year (sealed storage, away from moisture and light)



SOLVENT & SOLUBILITY

In Vitro

DMSO : 100 mg/mL (218.38 mM; Need ultrasonic)

H_2O : 33.33 mg/mL (72.79 mM; Need ultrasonic)

Preparing Stock Solutions

Solvent / Mass / Concentration	1 mg	5 mg	10 mg
1 mM	2.1838 mL	10.9192 mL	21.8384 mL
5 mM	0.4368 mL	2.1838 mL	4.3677 mL
10 mM	0.2184 mL	1.0919 mL	2.1838 mL

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

In Vivo

1. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.5 mg/mL (5.46 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: ≥ 2.08 mg/mL (4.54 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 2.08 mg/mL (4.54 mM); Clear solution

BIOLOGICAL ACTIVITY

Description	Topotecan Hydrochloride (SKF 104864A Hydrochloride) is a Topoisomerase I inhibitor with potent antineoplastic activities.
IC_{50} & Target	Topoisomerase I
In Vitro	Topotecan Hydrochloride (SKF 104864A Hydrochloride) obviously inhibits the proliferation of not only human glioma cells but also glioma stem cells (GSCs) in a dose- and time-dependent manner. According to the IC_{50} values at 24 h, 3 μM of Topotecan Hydrochloride is selected as the optimal administration concentration. In addition, Topotecan Hydrochloride

	induces cell cycle arrest in G0/G1 and S phases and promoted apoptosis. Results show that cell viability is inhibited by Topotecan Hydrochloride in a dose-dependent manner. 2, 20 and 40 μM of Topotecan Hydrochloride obviously inhibits the cell viability compared with the control groups. The IC_{50} values of Topotecan Hydrochloride at 24 h are 2.73±0.25 μM of U251 cells, 2.95±0.23 μM of U87 cells, 5.46±0.41 μM of GSCs-U251 and 5.95±0.24 μM of GSCs-U87. Thus 3 μM of Topotecan Hydrochloride is selected as the optimal administration concentration in the subsequent experiments[1]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.
In Vivo	NUB-7 metastatic model, the animals belonging to all the 4 groups are sacrificed after 14 days of treatment. Compared with the control, Low dose metronomic (LDM) Topotecan Hydrochloride and TP+Pazopanib (PZ) liver weights are significantly lower in TP+PZ-treated animals, compared with PZ. Microscopic tumors are visible in the livers of mice belonging to all the groups except TP+PZ confirming the ability of Topotecan Hydrochloride+PZ to control liver metastasis. In a previous dose-response study, the daily dose of oral metronomic Topotecan Hydrochloride (0.5, 1.0, and 1.5 mg/kg) causes greater reduction in microvascular density compared with weekly maximum-tolerated dose regimen (7.5 and 15 mg/kg) in an ovarian cancer model, but the mice treated with 1.5 mg/kg daily, oral Topotecan Hydrochloride show decreased food intake, and a lesser antitumor effect[2]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

PROTOCOL

Cell Assay [1]	The U251, U87, GSCs-U251 and GSCs-U87 cells are seeded at a density of 2×10^4 cells per well in 96-well plates separately, and incubated for 24 h. Cells are administered with Shikonin and Topotecan Hydrochloride (0.02, 0.2, 2, 20, 40 μM). After the treatment, 10 μL of cell counting kit-8 (CCK-8) is added into each well for additional 1-hour incubation at 37°C. The optical density (OD) is read with a microplate reader at 450 nm[1]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.
Animal Administration [2]	Mice[2] For subcutaneous xenograft studies, we used SK-N-BE, SH-SY5Y, KHOS, and RH30. 1×10^6 cells are implanted subcutaneously into the inguinal fat pad of each of nonobese diabetic/severe combined immune deficient (NOD/SCID) mice. When tumors reached 0.5 cm in diameter, the animals are randomized into 4 groups and treated daily by oral gavage. The animals are grouped as: Control group, LDM Topotecan group or LDM TP (1 mg/kg Topotecan), Pazopanib group or PZ (150 mg/kg Pazopanib) and combination group or TP + PZ (1 mg/kg Topotecan Hydrochloride + 150 mg/kg Pazopanib). To compare pulse Topotecan with LDM TP in KHOS osteosarcoma model, PZ is replaced by weekly oral dose of pulse Topotecan or Pulse TP (15 mg/kg Topotecan). The criteria for endpoint are tumor sizes exceeding 2.0 cm in diameter or animals showing signs of morbidity. The tumor sizes are measured on a daily basis until the endpoint or sacrifice. The long (D) and short diameters (d) are measured with calipers. Tumor volume (cm^3) is calculated as $V=0.5\times D\times d^2$. When the endpoint is reached or at the end of the treatment, the animals are sacrificed by cervical dislocation. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

CUSTOMER VALIDATION

- Nat Commun. 2019 Aug 21;10(1):3761.
- J Extracell Vesicles. 2022 Apr;11(4):e12206.
- J Exp Clin Cancer Res. 2018 Dec 20;37(1):321.
- Cancer Res. 2023 Nov 21:OF1-OF15.
- Cancer Immunol Res. 2023 May 3;11(5):583-599.

See more customer validations on www.MedChemExpress.com

REFERENCES

[1]. Zhang FL, et al. PLoS One. 2013 Nov 26;8(11):e81815.Topoisomerase I inhibitors, Shikonin and Topotecan, inhibit growth and induce apoptosis of glioma cells andglioma stem cells.

[2]. Kumar S, et al. Metronomic oral topotecan with pazopanib is an active antiangiogenic regimen in mouse models of aggressive pediatric solid tumor. Clin Cancer Res. 2011 Sep 1;17(17):5656-67.

Tel: 609-228-6898 Fax: 609-228-5909 E-mail: tech@MedChemExpress.com

Address: 1 Deer Park Dr, Suite Q, Monmouth Junction, NJ 08852, USA