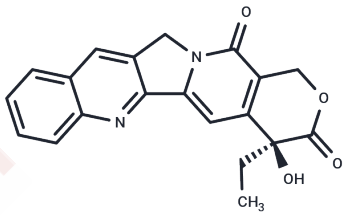
Data Sheet (Cat.No.T1123)

TargetMol

Camptothecin

Chemical Properties



CAS No. : 7689-03-4

Formula: C20H16N2O4

Molecular Weight: 348.35

Storage: Powder: -20°C for 3 years | In solvent: -80°C for 1 year
Actual storage temperature shall be subject to the COA.

Biological Description

Description	Camptothecin (CPT) belongs to the alkaloid group of natural products and is a specific DNA topoisomerase I (Topo I) inhibitor (IC50=679 nM) with specificity. Camptothecin has antitumor activity and induces apoptosis.
Targets(IC50)	Apoptosis,Antibiotic,Antifungal,ADC Cytotoxin,Influenza Virus,Topoisomerase,MicroRNA
In vitro	**METHODS**: Eight TNBC cell lines were treated with Camptothecin (0.1-5 μM) for 72 h. Cell viability was measured by PrestoBlue. **RESULTS**: Camptothecin inhibited the cell viability of MCF7, HCC1428, HCC1419, HCC202, MDA453, MDA231, Sum149, and BT549 cells, with IC50 values of 0.089/0.448/0.067/0.481/0.058/0.040/0.065/ 0.056 μM.[1]. **METHODS**: Lung cancer cells H1299 and H460 were treated with Camptothecin (0.5-5 μM) for 16 h. Cell migration was detected by wound-healing assay. **RESULTS**: Camptothecin inhibited the migration of H1299 and H460 cells without a dose-dependent effect. [2]
In vivo	**METHODS**: To assay antitumor activity in vivo, Camptothecin (0.15-1.2 mg/kg) and doxorubicin (0.25-2 mg/kg) were intravenously injected into athymic nu/n mice bearing triple-negative mammary carcinoma tumors, MDA-MB-231, every two days for four administrations. **RESULTS**: A dose-dependent reduction in tumor growth was observed, with a 40.8% reduction at 0.5 mg/kg DOX + 0.3 mg/kg CPT and a 93% reduction at 1.5 mg/kg DOX + 0.9 mg/kg CPT. The highest dose tested (2 mg/kg DOX + 1.2 mg/kg CPT) completely stopped tumor growth on day 44. [3] **METHODS**: To study the effects on obesity, Camptothecin (1 mg/kg, 0.1% Tween 80) was administered orally to obese mice once daily for three days. **RESULTS**: Oral administration of Camptothecin increased circulating GDF15 levels in diet-induced obese (DIO) mice and genetic ob/ob mice. Consistent with the anorectic effects of GDF15, Camptothecin inhibited food intake, thereby reducing body weight, blood glucose, and liver fat content in obese mice. [4]
Kinase Assay	Topoisomerase I Cleavable Complex Assay: Topoisomerase I is isolated from calf thymus and is devoid of topoisomerase II. All reactions are carried out in 10 mL volumes of reaction buffer (50 mM Tris-HCl, pH 7.5, 100 mM KCl, 0.5 mM EDTA, and 30 pg/mL BSA) in microtiter plates. Camptothecin is dissolved in DMSO at 10 mg/mL and serially diluted in 96-well microtiter plates to which the 32P end-labeled pBR322 DNA and topoisomerase enzyme are added. The reaction mixture is incubated at room temperature for 30 min

Kinase Assay	and then the reaction stopped by adding 2 mL of a mixture of sodium dodecyl sulfate and proteinase K (1.6% and 0.14 mg/mL final concentrations, respectively). The plates are heated at 50 °C for 30 min, 10 mL of standard stop mixture containing 0.45 N NaOH is added in order to generate single-stranded DNA, and the samples are electrophoresed in 1.5% agarose gels in TBE buffer. Gels are blotted on nitrocellulose paper, dried, and exposed to X-ray film. The units of cleavage are calculated from the autoradiographs and plotted against the log drug concentration. The IC50 values are then obtaine
Cell Research	Tumor cells are plated in 100 μL of medium in 96-well microtiter plates at a density of 1500 to 4000 cells per well and allowed to adhere overnight. Cells are incubated with Camptothecin for 48 hours and then with fresh medium for 48 hours. Camptothecin at each concentration is added in quadruplicate. Following a 4-hour incubation of treated cells with MTT, the reduced dye product is extracted from the cells with 0.2 mL of DMSO followed by 50 μL of Sorensen's buffer. The plates are shaken briefly, and the absorbance at 570 nm is read and quantitated. Curves are fitted to the MTT assay data using a four-parameter logistic equation.(Only for Reference)

Solubility Information

Solubility	DMSO: 5 mg/mL (14.35 mM),Sonication is recommended. (< 1 mg/ml refers to the product slightly soluble or insoluble)
In vivo Formulation	10% DMSO+40% PEG300+5% Tween 80+45% Saline: 0.5 mg/mL (1.44 mM),Suspension. *Please add the solvents sequentially, clarifying the solution as much as possible before adding the next one. Dissolve by heating and/or sonication if necessary. Working solution is recommended to be prepared and used immediately. The formulation provided above is for reference purposes only. In vivo formulations may vary and should be modified based on specific experimental conditions.*

Preparing Stock Solutions

	1mg	5mg	10mg
1 mM	2.8707 mL	14.3534 mL	28.7068 mL
5 mM	0.5741 mL	2.8707 mL	5.7414 mL
10 mM	0.2871 mL	1.4353 mL	2.8707 mL
50 mM	0.0574 mL	0.2871 mL	0.5741 mL

Please select the appropriate solvent to prepare the stock solution, according to the solubility of the product in different solvents. Please use it as soon as possible.

Note: The dilution table applies only to solid products. For liquid products, please calculate the stock solution based on the stated concentration and/or density.

Reference

Tesauro C, et al. Topoisomerase I activity and sensitivity to camptothecin in breast cancer-derived cells: a comparative study. BMC Cancer. 2019 Nov 29;19(1):1158.
Zeng H, Xie H, Ma Q, et al.Identification of N-(3-(methyl (3-(orotic amido) propyl) amino) propyl) oleanolamide as a novel topoisomerase I catalytic inhibitor by rational design, molecular dynamics simulation, and biological evaluation.Bioorganic Chemistry.2023: 106734.
Chiu YH, et al. Human non-small cell lung cancer cells can be sensitized to camptothecin by modulating autophagy. Int J Oncol. 2018 Nov;53(5):1967-1979.
Pusuluri A, et al. Role of synergy and immunostimulation in design of chemotherapy combinations: An analysis of doxorubicin and camptothecin. Bioeng Transl Med. 2019 Jun 13;4(2):e10129.
Lu JF, et al. Camptothecin effectively treats obesity in mice through GDF15 induction. PLoS Biol. 2022 Feb 24;20(2): e3001517.
Cheng F, et al. Oncogene, 2011, 30(33), 3599-3611.

Tel:781-999-4286 E_mail:info@targetmol.com Address:34 Washington Street,Wellesley Hills,MA 02481