Data Sheet (Cat.No.T61749)

TargetMol

Microtubule inhibitor 2

Chemical Properties

CAS No. :

Formula: C20H23NO7

Molecular Weight: 389.4

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	Microtubule inhibitor 2 is a highly potent and selective microtubule inhibitor, which is orally active. It induces cell death via ferroptosis, and exhibits notable antitumor activity [1].
Targets(IC50)	Others,Ferroptosis,Microtubule Associated
In vitro	Microtubule inhibitor 2, designated as compound 33, demonstrated antiproliferative effects in a study, with IC50 values of 0.01, 0.02, 0.02, 0.04, 0.05 μM against A549, Hela, A2780, HCT-8, and MCF-7 cancer cell lines, respectively, over a 48-hour period. It also exhibited selectivity between normal human cells and cancer cells, with IC50 values of 0.01, 0.04, 1.45, 1.32, and 0.54 μM for A549, quiescent HUVECs, LO2, HLF, and MCF-10A cells, accordingly. Furthermore, this compound showed efficacy against drug-resistant cancer cells, such as A549/ADM, HCT-8/VCR, and A2780/TAX, with IC50 values of 0.02, 0.07, and 0.04 μM. At concentrations of 5, 10, and 20 nM and exposure times of 24 and 48 hours, microtubule inhibitor 2 significantly disrupted the tubulin microtubule system's dynamic balance, induced multipolarization of the mitotic spindle, interfered with the mitosis of A549 cells, and halted cell cycle progression at the G2/M phase in a dose- and time-dependent manner. Notably, it induced cell death via ferroptosis, not apoptosis.
In vivo	Microtubule inhibitor 2, at a dosage of 10 mg/kg administered orally, exhibited excellent bioavailability (F% = 69.45) and, when administered intraperitoneally at the same dosage every other day for 22 days, demonstrated significant antitumor activity with a tumor growth inhibition rate of 78.63% [1]. Pharmacokinetic analysis in Male Institute of Cancer Research (ICR) mice (weighing 18-23 g) revealed a half-life (T 1/2) of 2.12 hours for oral administration and 0.62 hours for intravenous, with peak concentrations (Tmax) occurring at 0.25 hours and 0.08 hours, respectively. The maximum concentration (Tmax ng/mL) was 776.31 for oral and 871.40 for intravenous administration. The area under the curve (AUC) from time zero to the last measurable concentration (0-t) was 2432.04 h ng/mL for oral and 350.19 h ng/mL for intravenous administration, with the AUC from time zero to infinity (0-∞) closely matching these values. The mean residence time (MRT) was noted as 2.57 hours for oral and 0.68 hours for intravenous dosing, with a clearance rate (CL) of 2855.67 mL h^-1 kg^-1 noted only for intravenous administration. These findings were derived from studies using Male ICR mice and BALB/c nude mice (5 weeks old, weighing 18-20 g) in A549 xenograft models [1].

Preparing Stock Solutions

	1mg	5mg	10mg
1 mM	2.5681 mL	12.8403 mL	25.6805 mL
5 mM	0.5136 mL	2.5681 mL	5.1361 mL
10 mM	0.2568 mL	1.284 mL	2.5681 mL
50 mM	0.0514 mL	0.2568 mL	0.5136 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.