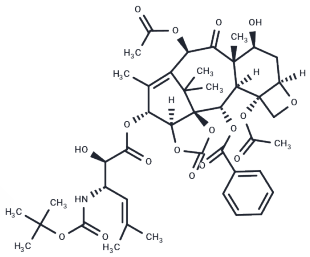
Data Sheet (Cat.No.T211012)

TargetMol

SB-T-101141

Chemical Properties



CAS No. : 186348-05-0

Formula: C44H55NO17

Molecular Weight: 869.90

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	SB-T-101141 is a novel taxane drug effective in inducing atypical ferroptosis, thereby overcoming resistance of breast cancer to Paclitaxel. It promotes the generation of iron ions, ferrous ions, and reactive oxygen species (ROS). SB-T-101141 stably binds to KHSRP, inhibiting the expression of the iron-dependent CISD1 related to iron homeostasis. It synergistically enhances the activation of the iron-dependent JNK and PERK pathways through KHSRP. SB-T-101141 inhibits breast tumor growth in MCF-7(PR) /MDA-MB-231(PR) or KHSRP knockout MCF-7 xenograft mouse models.
Targets(IC50)	Ferroptosis,JNK,p38 MAPK,ROS
In vitro	SB-T-101141, at concentrations of 1-3 μM for 12 hours, effectively induces microtubule polymerization and expression of tubulin in MCF-7 and MDA-MB-453 cells. When used at 1-3 μM for 72 hours, it exhibits potent cytotoxicity, achieving IC50 values of 0.03, 0.8, and 6.5 μM in MCF-7, MDA-MB-453, and MDA-MB-231 cells respectively, with similar effects on normal MCF-10A cells. The compound at 0.001-8 μM for 1-14 days strongly inhibits proliferation and colony formation in MCF-7 and MDA-MB-453 cells and induces increased cell death. At 9 μM for 5 days, SB-T-101141 effectively suppresses the growth of breast cancer organoids derived from patients. It significantly induces apoptosis and G2/M phase arrest in MCF-7 and MDA-MB-453 cells at concentrations of 1-8 μM for 12-60 hours, particularly at 1 μM, without altering the levels of cleaved PARP and caspase-7. SB-T-101141 at 3-16 μM for 4-72 hours induces ferroptosis-like cell death morphology in MCF-7 and MDA-MB-453 cells, with limited accumulation and increased membrane permeability, effects significantly blocked by Z-VAD-FMK and Necrostatin-1, while only slightly affecting mitochondrial number and ATP levels. The compound at 0.17-8 μM for 0-48 hours significantly increases levels of iron, ferrous ions, and MDA, while decreasing GSH levels in MCF-7, MDA-MB-453, and MCF-7PR cells, without affecting GPX4 expression. SB-T-101141 at 0.17-16 μM for 3-48 hours induces total ROS (neutralized by DFOM and NAC), lipid ROS, and membrane permeability in MCF-7, MDA-MB-453, MCF-7PR, and MDA-MB-453PR cells, leading to reduced cell viability and death, effects not mitigated by DFOM, Fer-1, or Lip-1. It also significantly inhibits proliferation of Paclitaxel-resistant MCF-7PR and MDA-MB-231PR cells at 3-5 nM for 14 days. At 0.25-1.5 μM for 24 hours, it induces death in Paclitaxel-resistant MCF-7PR and MDA-MB-453PR cells, effects only suppressed by iron chelators DFOM and CPX. Moreover, SB-T-101141 at 0.001-3 μM for 1-14 days shows increased sensitivity in KHSRP knockdown MCF-7 cells compared to HDGF and CYP2S1 knockdowns. When present at 0.01-100 μM for 2-24 hours, SB-T-101141 enhances the thermal stability of KHSRP protein but does not affect

In vitro	its expression in MCF-7 cells. Additionally, 1.5-3 μM for 0-24 hours promotes lipid peroxidation in MCF-7 and MCF-7PR cells via KHSRP, effectively reducing CISD1 mRNA and protein levels. At 10 μM for 4 hours, it affects ER stress-related G3BP1 granule aggregation without altering G3BP1 expression. Finally, SB-T-101141 at 0.17-16 μM for 24-48 hours elevates eIF2α protein levels through iron-dependent JNK and PERK signaling, inducing cell death in MCF-7, MDA-MB-453, MCF-7PR, and MDA-MB-231PR cells.
In vivo	SB-T-101141, administered at 5 mg/kg via intraperitoneal injection every three days, effectively inhibits tumor growth in MCF-7(PR)/MDA-MB-453(PR) xenograft mouse models without affecting body weight. However, in MCF-7 xenograft mice with KHSRP gene knockdown, the same treatment does not induce tumor growth inhibition or increase the expression levels of aldehyde 4-HNE.

Preparing Stock Solutions

	1mg	5mg	10mg
1 mM	1.1496 mL	5.7478 mL	11.4956 mL
5 mM	0.2299 mL	1.1496 mL	2.2991 mL
10 mM	0.115 mL	0.5748 mL	1.1496 mL
50 mM	0.023 mL	0.115 mL	0.2299 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.