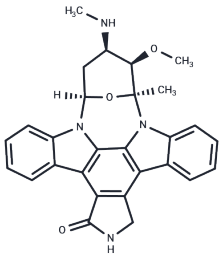
Data Sheet (Cat.No.T6680)

TargetMol

Staurosporine

Chemical Properties



CAS No. : 62996-74-1

Formula: C28H26N4O3

Molecular Weight: 466.53

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	Staurosporine (AM-2282) is a protein kinase inhibitor with ATP-competitive and non-selective inhibitory activity (IC50=6/15/2/3/3000 nM) against PKC, PKA, c-Fgr, phosphorylase kinase and TAOK2. Staurosporine also induces apoptosis.
Targets(IC50)	Apoptosis,Antibacterial,Antibiotic,Antifungal,PKA,PKC,Src
In vitro	**METHODS**: Human cervical cancer cells HeLa were treated with Staurosporine (1-10 nM) for 72 h, and cell viability was measured by MTT. **RESULTS**: Staurosporine inhibited the proliferation of Hela cells in a dose-dependent manner, with an IC50 of about 10 nM. [1] **METHODS**: Human pancreatic cancer cells PaTu 8988t and Panc-1 were treated with Staurosporine (1 μM) for 3-24 h, and cell death was detected by Flow Cytometry. **RESULTS**: For PaTu 8988t cells, incubation with Staurosporine for 3-24 h significantly increased apoptosis and significantly decreased the number of viable cells; necrosis increased after 6-16 h. For Panc-1 cells, Staurosporine treatment significantly increased apoptosis and significantly decreased the number of viable cells after 9-24 h. The RESULTS were summarized as follows. [2] **METHODS**: Human hepatocellular carcinoma cells HepG2 were treated with Staurosporine (20 nmol/L) for 6-24 h. The expression levels of target proteins were detected by Western Blot. **RESULTS**: Staurosporine significantly inhibited the phosphorylation of mTOR and increased the expression of LC3-II, an autophagy marker protein, suggesting that Staurosporine activates autophagy effectively by inhibiting mTOR. [3]
In vivo	**METHODS**: To assay anti-tumor activity in vivo, Staurosporine (3 mg/kg) and Lapatinib (50 mg/kg) were administered by gavage twice a week for two weeks to Nu/J-Foxn1 Nu/Nu mice harboring human mammary carcinoma tumors JIMT-1. **RESULTS**: The combination of Staurosporine and Lapatinib inhibited tumor growth in a statistically significant manner. [4] **METHODS**: To examine the effects on islet β-cell function, Staurosporine (0.4 mg/kg in 0.5% sodium carboxymethyl cellulose) was administered intraperitoneally to iPLA2β-/-C57BL6 mice once daily for two weeks. for two weeks. **RESULTS**: Staurosporine impairs glucose tolerance and glucose-stimulated insulin secretion in pancreatic islets. [5]
Kinase Assay	Enzyme assay and binding assay: Protein kinase C is assayed in a reaction mixture (0.25 mL) containing 5 μmol of Tris/HCl, pH 7.5, 2.5 μmol of magnesium acetate, 50 μg of

Kinase Assay	histone II S, 20 μg of phosphatidylserine, 0.88 μg of diolein, 125 nmol of CaCl2, 1.25 nmol of [γ-32]ATP (5-10 × 104 cpm/nmol) and 5 μg of partially purified enzyme. The binding of [3H]PDBu to protein kinase C is determined: Reaction mixture (200 μL contained 4 μmo1 of Tris/malate, pH 6.8, 20 μmol of KCl, 30 nmol of CaC12, 20 μg of phosphatidylserine, 5 μg of partially purified protein kinase C, 0.5% (final concentration) of DMSO,10 pmol of [3H]PDBu (l-3 × 104 cpm/pmol) and 10 μL of various amounts of Staurosporine.
Cell Research	Cells are exposed to Staurosporine for ~32 hours. Cells are fixed in 4% paraformaldehyde and stained with the DNA-binding dye Hoechst 33342. Cells are visualized under epifluorescence illumination, and the percentage of apoptotic cells (cells with condensed and fragmented DNA) is determined. (Only for Reference)

Solubility Information

Solubility	H2O: < 0.1 mg/mL (insoluble), DMSO: 31.56 mg/mL (67.65 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: 3.1 mg/mL (6.64 mM),Solution. *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	2.1435 mL	10.7174 mL	21.4348 mL
5 mM	0.4287 mL	2.1435 mL	4.287 mL
10 mM	0.2143 mL	1.0717 mL	2.1435 mL
50 mM	0.0429 mL	0.2143 mL	0.4287 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

Ma X, et al. Staurosporine targets the Hippo pathway to inhibit cell growth. J Mol Cell Biol. 2018 Jun 1;10(3):267-269.
Lü Z, Li X, Li K, et al. Nitazoxanide and related thiazolides induce cell death in cancer cells by targeting the 20S proteasome with novel binding modes. Biochemical Pharmacology. 2022: 114913.
Xu X, Lu Y, Cao L, et al.Tumor-intrinsic P2RY6 drives immunosuppression by enhancing PGE2 production.Cell Reports.2024, 43(7): 114469.
Wang Z, Guo P, Hu L, et al.Fibroinase plays a vital role in silk gland degeneration by regulating autophagy and apoptosis in the silkworm, Bombyx mori.International Journal of Biological Macromolecules.2024: 134312.
Zhong Z, Cui X L, Tan K J, et al.Apoptotic vesicles (apoVs) derived from fibroblast-converted hepatocyte-like cells effectively ameliorate liver fibrosis.Journal of Nanobiotechnology.2024, 22(1): 541.
Li X, Hu M, Zhou X, et al.Hederagenin inhibits mitochondrial damage in Parkinson's disease via mitophagy induction.Free Radical Biology and Medicine.2024
Tschuck J, Tonnus W, Gavali S, et al.Seratrodast inhibits ferroptosis by suppressing lipid peroxidation.Cell Death & Disease.2024, 15(11): 853.
Wen L, Rong F, Dai G, et al.Proteomic analysis of the nonstructural protein 2-host protein interactome reveals a novel regulatory role of SH3 domain-containing kinase-binding protein 1 in porcine reproductive and respiratory syndrome virus replication and apoptosis.International Journal of Biological Macromolecules.2025: 139218.
Yang G, Wan P, Xiang Q, et al. E3 Ubiquitin Ligase ASB17 Promotes Apoptosis by Ubiquitylating and Degrading BCLW and MCL1. Biology-Basel. 2021, 10(3): 234.
Malsy M, et al. Staurosporine induces apoptosis in pancreatic carcinoma cells PaTu 8988t and Panc-1 via the intrinsic signaling pathway. Eur J Med Res. 2019 Jan 28;24(1):5.
Ding Y, et al. Staurosporine suppresses survival of HepG2 cancer cells through Omi/HtrA2-mediated inhibition of PI3K/Akt signaling pathway. Tumour Biol. 2017 Mar;39(3):1010428317694317.
Yang J B, Song Y F, Liu Y, et al. UHPLC-QQQ-MS/MS assay for quantification of dianthrones as potential toxic markers of Polygonum multiflorum Thunb: Application to the standardization of TCMs with endogenous toxicity. Chinese Medicine. 021 Jul 3;16(1):51. doi: 10.1186/s13020-021-00463-w.
Zambrano JN, et al. Staurosporine, an inhibitor of hormonally up-regulated neu-associated kinase. Oncotarget. 2018 Nov 13;9(89):35962-35973.
Xiao Q, Ye T, Wang X, et al. A network pharmacology-based study on key pharmacological pathways and targets of Qi Fu Yin acting on Alzheimer's disease. Experimental Gerontology. 2021 Jul 1;149:111336. doi: 10.1016/j.exger.2021.111336. Epub 2021 Mar 27.
Zhao Z, et al. Protection of pancreatic beta-cells by group VIA phospholipase A(2)-mediated repair of mitochondrial membrane peroxidation. Endocrinology. 2010 Jul;151(7):3038-48.
Jiang X, Teng X, Shi H, et al.Discovery and optimization of olanzapine derivatives as new ferroptosis inhibitors. Bioorganic Chemistry.2023: 106393.
Liu H, Chen M, Ning F, et al.Extravillous trophoblast cell derived exosomes induce vascular smooth muscle cell apoptosis via a mechanism associated with miR-143-3p.Molecular Human Reproduction.2023: gaad026.
Yang J B, Song Y F, Liu Y, et al. UHPLC-QQQ-MS/MS assay for quantification of dianthrones as potential toxic markers of Polygonum multiflorum Thunb: Application to the standardization of TCMs with endogenous toxicity[J]. 2021
Tschuck J, Theilacker L, Rothenaigner I, et al.Farnesoid X receptor activation by bile acids suppresses lipid peroxidation and ferroptosis.Nature Communications.2023, 14(1): 6908.
Xiao Q, Ye T, Wang X, et al. A network pharmacology-based study on key pharmacological pathways and targets of Qi Fu Yin acting on Alzheimer's disease[J]. Experimental Gerontology. 2021: 111336.
Tan Q, Wu D, Lin Y, et al.Identifying eleven new ferroptosis inhibitors as neuroprotective agents from FDA-approved drugs.Bioorganic Chemistry.2024: 107261.
Sicinska E, Kola V S R, Kerfoot J A, et al.ASPSCR1:: TFE3 Drives Alveolar Soft Part Sarcoma by Inducing Targetable Transcriptional Programs.Cancer Research.2024

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