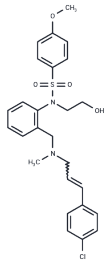
Data Sheet (Cat.No.T2697)

TargetMol

KN-93

Chemical Properties



CAS No. : 139298-40-1

Formula: C26H29ClN2O4S

Molecular Weight: 501.04

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	KN-93 is a selective inhibitor of Ca2+/calmodulin-dependent kinase II (CaMKII), competitively blocking CaM binding to the kinase.
Targets(IC50)	CaMK,Autophagy
In vitro	Following 2 days of treatment with KN-93, 95% of cells are halted in the G1 phase, a process which is reversible; one day post KN-93 withdrawal, a notable number of cells transition into the S and G2-M phases. KN-93 effectively inhibits cell growth prompted by various growth factors, including basic fibroblast growth factor, platelet-derived growth factor-BB, epidermal growth factor, and insulin-like growth factor-1, in NIH 3T3 fibroblasts[1]. Moreover, KN-93 disrupts H+, K+-ATPase activity, significantly dissipates the proton gradient across gastric membrane vesicles, and diminishes the luminal space volume[2]. At a concentration of 0.5 μM, KN-93 averts the increase in left ventricular (LV) developed pressure and the occurrence of early afterdepolarizations. It also blocks the rise in Ca2+-independent CaM kinase activity observed during these afterdepolarizations[3]. At a 10 μM concentration, KN-93 significantly suppresses the activation of CaMKII/NF-κB signaling triggered by high glucose levels, leading to a decreased expression of VEGF, iNOS, and ICAM-1 in Müller cells[4].
In vivo	KN-93, administered intraperitoneally at a dosage of 1 mg/kg/day, effectively reduces retinal vascular leakage in diabetes and concurrently inhibits the phosphorylation of CaMKII and NF-κB within the diabetic retina[4].
Kinase Assay	Cells are grown on 12-mm diameter glass coverslips in DMEM 100% serum and various concentrations of KN-93 or KN-92. After 0, 1, 2, and 3 days of culture in the presence of drug, coverslips are removed from culture, rinsed once in PBS, and then submerged in 100% methanol at -20°C for 3 min. Fixed cells are stored in PBS until staining using the TUNEL assay. Cells are overlaid on 20 μL PBS/1 mg/mL BSA for 30 min, rinsed in PBS, and then overlaid on 20 μL containing 100 mM sodium cacodylate (pH 6.8), 1 mM CoCl2, 0.1 mM DTT, 0.1 mg/mL BSA, 20 μM fluorescein-12-dUTP, and 0.1 unit/μL terminal transferase at 37°C for 60 min. Coverslips are rinsed in PBS twice, mounted on slides, and photographed using an OLYMPUS BX50 epifluorescent microscope using a UPLAN APO 40X oil immersion objective.
Cell Research	KN-93 is dissolved in DMSO. Cell viability is assessed by the 3-(4,5-dimethylthiazol-2-yl) -2,5- diphenyltetrazolium bromide (MTT) assay. Briefly, Müller cells are seeded at a density of 10×104 cells per well in 96-well plates and cultured until sub-confluence.

Cell Research	Next, cells are treated with curcumin for 24 h before incubation with MTT (5 mg/mL) at 37°C in 5% CO2 atmosphere for 4 h. The culture medium is then removed, and the formazan formed in the reaction is dissolved in 150 μL DMSO. The optical density of the solution is measured at 490 nm using a multifunctional microplate reader. Cell viability in each well is presented as a percentage of the control (vehicle-treated group).

Solubility Information

Solubility	DMSO: 50 mg/mL (99.79 mM),Sonication is recommended. (< 1 mg/ml refers to the product slightly soluble or insoluble)
In vivo Formulation	10% DMSO+90% Corn Oil: 1 mg/mL (2 mM),Sonication is recommended. *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	1.9958 mL	9.9792 mL	19.9585 mL
5 mM	0.3992 mL	1.9958 mL	3.9917 mL
10 mM	0.1996 mL	0.9979 mL	1.9958 mL
50 mM	0.0399 mL	0.1996 mL	0.3992 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

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