Data Sheet (Cat.No.T3050)

TargetMol

ML-7 hydrochloride

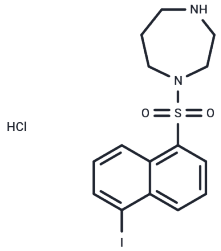
Chemical Properties

CAS No. : 110448-33-4

Formula: C15H18ClIN2O2S

Molecular Weight: 452.74

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	ML-7 hydrochloride (ML-7 HCl) is a cell-permeable, reversible, effective, ATP-competitive, and specific inhibitor of myosin light chain kinase (Ki: 300 nM); also inhibits smooth-muscle myosin light chain kinase, PKA, and PKC.
Targets(IC50)	Myosin,PKA,PKC,Serine/threonin kinase,YAP
In vitro	Inhibition of MLCK by ML-7 induces activation of caspase-3 in adherent MCF-10A and MCF-10A Ras-transformed cells[2]. Its treatment results in a dose-dependent decrease in MLC20 phosphorylation and a corresponding increase in cell death of SMC(smooth muscle cells). The inhibitory effect of ML-7 on MLCK is highly selective. The Ki of ML-7 for MLCK is 0.3 μM, while its Ki for protein kinase A is 21 μM and for protein kinase C is 42 μM. Overexpressing Bcl-2 can protect cells against apoptosis induced by ML-7[4].
In vivo	ML7 is able to improve Vascular endothelial dysfunction(VED) and atherosclerosis(AS) by regulating the expression of the tight junction (TJ) proteins zona occludens (ZO)-1 and occludin via mechanisms involving MLCK and MLC phosphorylation in high-fat diet-fed rabbits. ML7 decreases the expression of MLCK and MLC phosphorylation in the arterial wall of rabbits fed a high-fat diet and reduces lipid deposition lesions in AS rabbits[1].
Kinase Assay	IKK-2 Assay: Recombinant human IKK-2 (residues 1-756) is expressed in baculovirus as an N-terminal GST-tagged fusion protein, and its activity is assessed using a time-resolved fluorescence resonance energy transfer assay. In brief, IKK-2 (5 nM final) diluted in assay buffer (50 mM HEPES, 10 mM MgCl2, 1 mM CHAPS, pH 7.4, with 1 mM DTT and 0.01% w/v BSA) is added to wells containing various concentrations of compound or dimethyl sulfoxide (DMSO) vehicle (3% final). The reaction is initiated by the addition of GST-IκBα substrate (25 nM final)/ATP (1 μM final), in a total volume of 30 μL. The reaction is incubated for 30 min at room temperature, then terminated by the addition of 15 μL of 50 mM EDTA. Detection reagent (15 μL) in buffer (100 mM HEPES, pH 7.4, 150 mM NaCl, and 0.1% w/v BSA) containing antiphosphoserine- IκBα-32/36 monoclonal antibody 12C2, labeled with W-1024 europium chelate, and an allophycocyanin-labeled anti-GST antibody is added, and the reaction is further incubated for 60 min at room temperature. The degree of phosphorylation of GST- IκBαis measured as a ratio of specific 665-nm energy transfer signal to reference europium 620-nm signal, using a Packard Discovery plate reader.
Cell Research	Cells are treated with vehicle alone, Blebbistatin, ML-7, ML-9, latrunculin A or Y-27632 in media without serum at varying concentrations and time points before being fixed or prepared for FACS analysis. Untreated cells are also serum starved for the duration of

Cell Research	the inhibitor treatment. Stock solutions of each agent are made in DMSO (50 μM Blebbistatin, 5 mM LA), 50% ethanol (10 mM ML-7), 70% ethanol (20 mM ML-9) or water (20 mM Y-27632) and are maintained at -20°C.(Only for Reference)

Solubility Information

Solubility	DMSO: 46 mg/mL (101.6 mM),Sonication is recommended. (< 1 mg/ml refers to the product slightly soluble or insoluble)

Preparing Stock Solutions

	1mg	5mg	10mg
1 mM	2.2088 mL	11.0439 mL	22.0877 mL
5 mM	0.4418 mL	2.2088 mL	4.4175 mL
10 mM	0.2209 mL	1.1044 mL	2.2088 mL
50 mM	0.0442 mL	0.2209 mL	0.4418 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

Cheng X, et al. Mol Med Rep. 2015, 12(3):4109-16.
Zhang H, Lin F, Huang J, et al. Anisotropic stiffness gradient-regulated mechanical guidance drives directional migration of cancer cells. Acta Biomaterialia. 2020
Sun L, Sun L, Li X, et al. A Novel Tigecycline Adjuvant ML-7 Reverses the Susceptibility of Tigecycline-Resistant Klebsiella pneumoniae. Frontiers in cellular and infection microbiology. 2022: 1341.
Connell LE, et al. J Cell Sci. 2006, 119(Pt 11):2269-81.
Saitoh M, et al. J Biol Chem. 1987, 262(16):7796-801.
Fazal F, et al. Mol Cell Biol. 2005, 25(14):6259-66.
Zhang H, Lin F, Huang J, et al. Anisotropic stiffness gradient-regulated mechanical guidance drives directional migration of cancer cells[J]. Acta Biomaterialia. 2020.

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