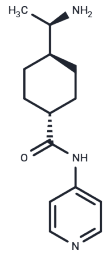
Data Sheet (Cat.No.T1870)

TargetMol

Y-27632

Chemical Properties



CAS No. : 146986-50-7

Formula: C14H21N3O

Molecular Weight: 247.34

Storage: Keep away from direct sunlight
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	Y-27632 is an orally potent, ATP-competitive inhibitor of ROCK-I and ROCK-II. Y-27632 also inhibits isolation-induced apoptosis in mouse prostate stem or progenitor cells.
Targets(IC50)	Apoptosis,ROCK
In vitro	**METHODS**: Human induced pluripotent stem cells, marmoset iPSC, were treated with Y-27632 (5-20 μM) for 7 days and clone formation was detected by AKP. **RESULTS**: Y-27632 significantly improved the cloning efficiency of marmoset iPSC. [1] **METHODS**: Adult adipose tissue-derived stem cells ADSCs were treated with Y-27632 (5 μmol/L) for 1 h. The morphological changes of ADSCs were detected. **RESULTS**: Y-27632 dose-dependently induced neuronal differentiation in ADSCs. the percentage of neuron-like cells in ADSCs treated with 5 μmol/L Y-27632 for 1 h was (93.5 ±4.7)%. [2] **METHODS**: Crab monkey embryonic stem cells cyES were routinely passaged or treated with Y-27632 (1-10 μM) for 24 h. Live-dead staining was performed using the Flow Cytometry method, and BrdU was detected using a kit. **RESULTS**: Y-27632 promoted the increase of cyES surviving cells. Y-27632 did not promote cell proliferation, but protected the cells from cell death after single-cell digestion. [3]
In vivo	**METHODS**: To investigate the therapeutic potential of Y-27632 in motor neuron disease, Y-27632 (2 or 30 mg/kg in drinking water) was administered orally to SOD1G93A mice in the ALS model for 137 days. **RESULTS**: Y-27632 2 mg/kg treatment was ineffective, Y-27632 30 mg/kg treatment improved motor function in male mice, and female mice showed only limited improvement. [4] **METHODS**: To investigate the effect of Y-27632 on liver fibrosis, Y-27632 (30 mg/kg) was administered orally to rats with dimethylnitrosamine (DMN)-induced liver fibrosis once a day for four weeks. **RESULTS**: Y-27632 treatment significantly reduced the incidence of DMN-induced hepatic fibrosis and lowered the levels of collagen and hydroxyproline as well as the expression of α-SMA in the liver. [5]
Kinase Assay	Recombinant ROCK-I, ROCK-II, PKN, or citron kinase is expressed in HeLa cells as Myc-tagged proteins by transfection using Lipofectamine, and is precipitated from the cell

Kinase Assay	lysates by the use of 9E10 monoclonal anti-Myc antibody coupled to G protein-Sepharose. Recovered immunocomplexes are incubated with various concentrations of [32P]ATP and 10 mg of histone type 2 as substrates in the absence or presence of various concentrations of either Y-27632 or Y-30141 at 30°C for 30 min in a total volume of 30 μL of the kinase buffer containing 50 mM HEPES-NaOH, pH 7.4, 10 mM MgCl2, 5 mM MnCl2, 0.02% Briji 35, and 2 mM dithiothreitol. PKCa is incubated with 5 μM [32P]ATP and 200 μg/mL histone type 2 as substrates in the absence or presence of various concentrations of either Y-27632 or Y-30141 at 30°C for 10 min in a kinase buffer containing 50 mM Tris-HCl, pH 7.5, 0.5 mM CaCl2, 5 mM magnesium acetate, 25 μg/mL phosphatidyl serine, 50 ng/mL 12-O-tetradecanoylphorbol-13-acetate and 0.001% leupeptin in a total volume of 30 μL. Incubation is terminated by the addition of 10 μL of 43 Laemmli sample buffer. After boiling for 5 min, the mixture is subjected to SDS-polyacrylamide gel electrophoresis on a 16% gel. The gel is stained with Coomassie Brilliant Blue, and then dried. The bands corresponding to histone type 2 are excised, and the radioactivity is measured[1].
Cell Research	Y-27632 is dissolved in water and stored[1]. HeLa cells are plated at a density of 3×104 cells per 3.5-cm dish. The cells are cultured in DMEM containing 10% FBS in the presence of 10 mM Thymidine for 16 h. After the cells are washed with DMEM containing 10% FBS, they are cultured for an additional 8 h, and then 40 ng/mL of Nocodazole is added. After 11.5 h of the Nocodazole treatment, various concentrations of Y-27632 (0-300 μM), Y-30141, or vehicle is added and the cells are incubated for another 30 min[1].

Solubility Information

Solubility	H2O: insoluble DMSO: 127.5 mg/mL (515.48 mM),Sonication is recommended. (< 1 mg/ml refers to the product slightly soluble or insoluble)
In vivo Formulation	10% DMSO+90% Saline: 2.48 mg/mL (10.03 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	4.043 mL	20.2151 mL	40.4302 mL
5 mM	0.8086 mL	4.043 mL	8.086 mL
10 mM	0.4043 mL	2.0215 mL	4.043 mL
50 mM	0.0809 mL	0.4043 mL	0.8086 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

Wu Y, et al. ROCK inhibitor Y27632 promotes proliferation and diminishes apoptosis of marmoset induced pluripotent stem cells by suppressing expression and activity of caspase 3. Theriogenology. 2016 Jan 15;85(2): 302-14.
Chen Y P, Shao Y, Chen P C, et al.Substrate nesting guides cyst morphogenesis of human pluripotent stem cells without 3D extracellular matrix overlay.Acta Biomaterialia.2023
Yang Y, Suo N, Cui S, et al.Trametinib, an anti-tumor drug, promotes oligodendrocytes generation and myelin formation.Acta Pharmacologica Sinica.2024: 1-13.
Tan Z, Pan K, Sun M, et al.CCKBR+ cancer cells contribute to the intratumor heterogeneity of gastric cancer and confer sensitivity to FOXO inhibition.Cell Death & Differentiation.2024: 1-16.
Zeng B, Xu L, Wang G, et al.Distinctive small molecules blend: promotes lacrimal gland epithelial cell proliferation in vitro and accelerates lacrimal gland injury repair in vivo.The Ocular Surface.2024
Liu Y, Zhang S, Zou G, et al.Generation and characterization of giant panda induced pluripotent stem cells.Science Advances.2024, 10(38): eadn7724.
UNRUG-BIELAWSKA K, EARNSHAW D, CYBULSKA-LUBAK M, et al.Therapeutic Responses to Two New SN-38 Derivatives in Colorectal Cancer Patient-Derived Xenografts and Respective 3D In Vitro Cultures.Anticancer Research.2024, 44(10): 4219-4224.
Lin Y, Liu N, Yang C, et al.Oncolytic activity of a coxsackievirus B3 strain in patient-derived cervical squamous cell carcinoma organoids and synergistic effect with paclitaxel.Virology Journal.2024, 21(1): 245.
Zhao H, Cao N, Liu Q, et al.Inhibition of the E3 ligase UBR5 stabilizes TERT and protects vascular organoids from oxidative stress.Journal of Translational Medicine.2024, 22: 1080.
Yang L, Wang X, Zhou X, et al.A tunable human intestinal organoid system achieves controlled balance between self-renewal and differentiation.Nature Communications.2025, 16(1): 315.
Wang X, Liang X, Zhou L, et al. Yes-associated protein reacts differently in vascular smooth muscle cells under different intensities of mechanical stretch. Aging (Albany NY). 2022, 14(1): 286.
Xue ZW, et al. Rho-associated coiled kinase inhibitor Y-27632 promotes neuronal-like differentiation of adult human adipose tissue-derived stem cells. Chin Med J (Engl). 2012 Sep;125(18):3332-5.
Takehara T, et al. Rho-associated kinase inhibitor Y-27632 promotes survival of cynomolgus monkey embryonic stem cells. Mol Hum Reprod. 2008 Nov;14(11):627-34.
Xu L, Wang G, Shi R, et al.A cocktail of small molecules maintains the stemness and differentiation potential of conjunctival epithelial cells.The Ocular Surface.2023
He W, Zhu X, Xin A, et al. Long-term maintenance of human endometrial epithelial stem cells and their therapeutic effects on intrauterine adhesion. Cell & Bioscience. 2022, 12(1): 1-20.
Günther R, et al. The rho kinase inhibitor Y-27632 improves motor performance in male SOD1(G93A) mice. Front Neurosci. 2014 Oct 7;8:304.
Tada S, et al. A selective ROCK inhibitor, Y27632, prevents dimethylnitrosamine-induced hepatic fibrosis in rats. J Hepatol. 2001 Apr;34(4):529-36.
Tao Z, Cui Y, Xu X, et al. FGFR redundancy limits the efficacy of FGFR4-selective inhibitors in hepatocellular carcinoma. Proceedings of the National Academy of Sciences. 2022, 119(40): e2208844119.
Schenke M, Prause H C, Bergforth W, et al. Human-Relevant Sensitivity of iPSC-Derived Human Motor Neurons to BoNT/A1 and B1. Toxins. 2021, 13(8): 585.
Housmans B A C, Neefjes M, Surtel D A M, et al. Synovial fluid from end-stage osteoarthritis induces proliferation and fibrosis of articular chondrocytes via MAPK and RhoGTPase signaling. Osteoarthritis and Cartilage. 2022
Lv J Q, Chen P C, Chen Y P, et al.Active hole formation in epithelioid tissues.Nature Physics.2024: 1-11.
Zhao Y, Pan Z, Hong Z, et al.Protocol for scarless genome editing of human pluripotent stem cell based on orthogonal selective reporters.STAR protocols.2024, 5(2): 103084.

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