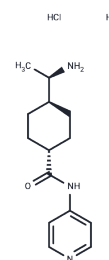


Y-27632 dihydrochloride

Chemical Properties

CAS No. :	129830-38-2
Formula:	C ₁₄ H ₂₁ N ₃ O·2HCl
Molecular Weight:	320.26
Storage:	Keep away from moisture, Keep away from direct sunlight, Store at low temperature Powder: -20°C for 3 years In solvent: -80°C for 1 year <small>Actual storage temperature shall be subject to the COA.</small>



Biological Description

Description	Y-27632 dihydrochloride (Y-27632 2HCl) is an orally potent, ATP-competitive inhibitor of ROCK-I and ROCK-II. Y-27632 dihydrochloride also inhibits isolation-induced apoptosis in mouse prostate stem or progenitor cells.
Targets(IC50)	Apoptosis, ROCK
In vitro	<p>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.</p> <p>RESULTS: Y-27632 significantly improved the cloning efficiency of marmoset iPSC. [1]</p> <p>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.</p> <p>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]</p> <p>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.</p> <p>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]</p>
In vivo	<p>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.</p> <p>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]</p> <p>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.</p> <p>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]</p>

Kinase Assay	Recombinant ROCK1/2, PKN, or citron kinase is expressed in HeLa cells as Myc-tagged proteins by transfection using Lipofectamine and is precipitated from the cell 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 MgCl ₂ , 5 mM MnCl ₂ , 0.02% Brij 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 CaCl ₂ , 5 mM magnesium acetate, 25 µg/mL phosphatidylserine, 50 ng/mL 12-O-tetradecanoyl phorbol-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	HeLa cells are plated at a density of 3×10 ⁴ 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) or vehicle is added and the cells are incubated for another 30 min [1].
Animal Research	A group of animals was injected with a single dose of pentylenetetrazole (PTZ, 65 mg/kg) to investigate if the two Rho-kinase inhibitors, fasudil, and Y-27632, changed the onset of PTZ seizures. Fasudil, Y-27632 or saline was given intraperitoneally 30 min before the PTZ injection. Each mouse was then observed for a 15-min period to measure the onset of the first myoclonic jerk, the onset of the first clonic convulsion and the occurrence of tonic hindlimb extension. Some of the animals died after tonic hindlimb extension, which is an expected outcome of acute PTZ injection. After the observation period, all animals were killed by halothane anesthesia [5]. Seven-week-old male Wistar rats were anesthetized with sodium pentobarbital. A silver clip (0.2 mm in diameter) was placed on the left renal artery in the preparation of the renal hypertensive rats. In the preparation of the DOCA-salt hypertensive rats, the left kidney was removed and a DOCA pellet (50 mg) was implanted subcutaneously. The DOCA rats were then fed an 8% salt diet. Rats from both groups were used after 8 weeks in the experiments, together with a male, 17–22-week old spontaneously hypertensive rats. The average systolic pressure in these groups of hypertensive rats ranged from 209 to 237 mm Hg, and no significant difference was found between groups. Eight-week-old male Wistar rats were used as controls. Their average systolic pressure was 139 mm Hg. Y-27632 was administered orally. The systolic blood pressure was measured by the tail cuff method at 1, 3, 5, 7 and 24 h. The rats were prewarmed to 40°C for 10 min before each measurement. No toxicity was found in rats treated with 30 mg/kg of Y-27632 administered per os once per day for 10 days [4].

Solubility Information

Solubility	DMSO: 255 mg/mL (796.23 mM), Sonication is recommended. H ₂ O: 32.03 mg/mL (100.01 mM), Sonication is recommended. (< 1 mg/ml refers to the product slightly soluble or insoluble)
------------	---

A DRUG SCREENING EXPERT

In vivo Formulation	10% DMSO+40% PEG300+5% Tween 80+45% Saline: 5 mg/mL (15.61 mM), Sonication is recommended. <i>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.</i>
---------------------	--

Preparing Stock Solutions

	1mg	5mg	10mg
1 mM	3.1225 mL	15.6123 mL	31.2246 mL
5 mM	0.6245 mL	3.1225 mL	6.2449 mL
10 mM	0.3122 mL	1.5612 mL	3.1225 mL
50 mM	0.0624 mL	0.3122 mL	0.6245 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.
- Fu G B, Huang W J, Zeng M, et al. Expansion and differentiation of human hepatocyte-derived liver progenitor-like cells and their use for the study of hepatotropic pathogens. *Cell Research*. 2019, 29(1): 8-22
- Mergani A E, Meurer M, Wiebe E, et al. Alteration of cholesterol content and oxygen level in intestinal organoids after infection with *Staphylococcus aureus*. *The FASEB Journal*. 2023, 37(12): e23279.
- Gong-Bo Fu, Wei-Jian Huang, Min Zeng, Xu Zhou, Hong-Ping Wu, Chang-Cheng Liu, Han Wu, Jun Weng, Hong-Dan Zhang, Yong-Chao Cai, Charles Ashton, Min Ding, Dan Tang, Bao-Hua Zhang, Yi Gao, Wei-Feng Yu, Bo Zhai, Zhi-Ying He, Hong-Yang Wang, and He-Xin Yan . Expansion and differentiation of human hepatocyte-derived liver progenitor-like cells and their use for the study of hepatotropic pathogens [J]. *Cell Research*. 2019 Jan;29(1):8-22.
- Nemati N, Boeck N, Lamberti G, et al. Protocol for functional profiling of patient-derived organoids for precision oncology. *STAR Protocols*. 2024, 5(1): 102887.
- Xiong G, Xie N, Nie M, et al. Single-cell transcriptomics reveals cell atlas and identifies cycling tumor cells responsible for recurrence in ameloblastoma. *International Journal of Oral Science*. 2024, 16(1): 21.
- Windhaber C, Heckl A, Csukovich G, et al. A matter of differentiation: equine enteroids as a model for the in vivo intestinal epithelium. *Veterinary Research*. 2024, 55(1): 1-21.
- Chen X, Sun J, Wang T, et al. Generation of a human iPSC line from a Parkinson's disease patient with a novel CHCHD2 mutation (R145Q). *Stem Cell Research*. 2024: 103419.
- Xu C, Zhao W, Peng L, et al. PRDM14 extinction enables the initiation of trophoblast stem cell formation. *Cellular and Molecular Life Sciences*. 2024, 81(1): 208.
- Fan Y, Huang S, Li S, et al. The adipose-neural axis is involved in epicardial adipose tissue-related cardiac arrhythmias. *Cell Reports Medicine*. 2024
- Xiang J, Wang H, Shi B, et al. Pig blastocyst-like structure models from embryonic stem cells. *Cell Discovery*. 2024, 10(1): 72.
- Liang Z, Huang T, Li W, et al. ALKBH5 governs human endoderm fate by regulating the DKK1/4-mediated Wnt/ β -catenin activation? mode longmeta?>. *Nucleic Acids Research*. 2024: gkae707.
- Xu Y, Duan Y, Xu S, et al. Mild hypothermia therapy attenuates early BBB leakage in acute ischaemic stroke. *Journal of Cerebral Blood Flow & Metabolism*. 2024: 0271678X241275761.
- Zhu Y, Wang L, Yu H, et al. In situ generation of human brain organoids on a micropillar array. *Lab on A Chip*. 2017 Aug 22;17(17):2941-2950
- 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.
- Xue J, Chu Y, Huang Y, et al. A tumorigenicity evaluation platform for cell therapies based on brain organoids. *Translational Neurodegeneration*. 2024, 13(1): 53.
- Wang F, Zou X, Zheng H, et al. Human epicardial organoids from pluripotent stem cells resemble fetal stage with potential cardiomyocyte-transdifferentiation. *Cell & Bioscience*. 2025, 15(1): 1-15.
- Yang C, Yang H, Xian Y, et al. Development of a Rat Airway Organoids Model for Studying Chronic Obstructive Pulmonary Disease. *Tissue and Cell*. 2024: 102692.
- 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.
- Wen L, Miao Y, Fan Z, et al. Establishment of an Efficient Primary Culture System for Human Hair Follicle Stem Cells Using the Rho-Associated Protein Kinase Inhibitor Y-27632. *Frontiers in Cell and Developmental Biology*. 2021 Mar 5;9:632882. doi: 10.3389/fcell.2021.632882. eCollection 2021.
- Li Z, Luo W, Fang S, et al. Prostacyclin facilitates vascular smooth muscle cell phenotypic transformation via activating TP receptors when IP receptors are deficient. *Acta Physiologica*. 2020: e13555
- 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.
- Chen X, Lin J, Hu T, et al. Galectin-3 exacerbates ox-LDL-mediated endothelial injury by inducing inflammation via

integrin β 1-RhoA-JNK signaling activation. *Journal of Cellular Physiology*. 2019 Jul;234(7):10990-11000

Schenke M, Schjeide B M, Püschel G P, et al. Analysis of Motor Neurons Differentiated from Human Induced Pluripotent Stem Cells for the Use in Cell-Based Botulinum Neurotoxin Activity Assays. *Toxins*. 2020, 12(5): 276

Schenke M, Schjeide B M, Püschel G P, et al. Analysis of Motor Neurons Differentiated from Human Induced Pluripotent Stem Cells for the Use in Cell-Based Botulinum Neurotoxin Activity Assays[J]. *Toxins*. 2020, 12(5): 276.

Chen X, Lin J, Hu T, et al. Galectin-3 exacerbates ox-LDL-mediated endothelial injury by inducing inflammation via integrin β 1-RhoA-JNK signaling activation[J]. *Journal of cellular physiology*. 2019 Jul;234(7):10990-11000.

Zhu Y, Wang L, Yin F, et al. A hollow fiber system for simple generation of human brain organoids. *Integrative Biology*. 2017 Sep 18;9(9):774-781

Li Z, Luo W, Fang S, et al. Prostacyclin facilitates vascular smooth muscle cell phenotypic transformation via activating TP receptors when IP receptors are deficient[J]. *Acta Physiologica*. 2020: e13555.

Wang C, Li Y, Jia L, et al. CD276 expression enables squamous cell carcinoma stem cells to evade immune surveillance. *Cell Stem Cell*. 2021 Sep 2;28(9):1597-1613.e7. doi: 10.1016/j.stem.2021.04.011. Epub 2021 May 3.

Xu L, Kan S, Yu X, et al. Deep learning enables stochastic optical reconstruction microscopy-like superresolution image reconstruction from conventional microscopy. *iScience*. 2023, 26(11).

Zhu Y, Wang L, Yu H, et al. In situ generation of human brain organoids on a micropillar array[J]. *Lab on a Chip*. 2017 Aug 22;17(17):2941-2950.

Inhibitor · Natural Compounds · Compound Libraries · Recombinant Proteins

This product is for Research Use Only · Not for Human or Veterinary or Therapeutic Use

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