

Y-27632

Chemical Properties

CAS No. : 146986-50-7
Formula: C₁₄H₂₁N₃O
Molecular Weight: 247.34
Appearance: no data available
Storage: keep away from direct sunlight
Powder: -20°C for 3 years | In solvent: -80°C for 1 year

Biological Description

Description	Y-27632 (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)	ROCK, Apoptosis
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 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 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 3×10 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), Y-30141, or vehicle is added and the cells are incubated for another 30 min[1].

Solubility Information

Solubility	H ₂ O: 1 mg/ml (4.04 mM) 5% DMSO+95% Saline: 1.24 mg/mL (5 mM, suspension) DMSO: 45 mg/mL (181.94 mM), (< 1 mg/ml refers to the product slightly soluble or insoluble)
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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.

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):

Inhibitor · Natural Compounds · Compound Libraries · Recombinant Proteins

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Tel:781-999-4286 E_mail:info@targetmol.com Address:36 Washington Street,Wellesley Hills,MA 02481