Y-27632 (Dihydrochloride) is a cell-permeable, highly potent and selective inhibitor of Rho-associated, coiled-coil containing protein kinase (ROCK). Y-27632 inhibits both ROCKI (Ki = 220 nM) and ROCKII (Ki = 300 nM) by competing with ATP for binding to the catalytic site (Davies et al.; Ishizaki et al.).

Alternative Names: ROCK inhibitor
CAS Number: 129830-38-2
Chemical Formula: C_{14}H_{21}N_{3}O · 2HCl
Molecular Weight: 320.3 g/mol
Purity: ≥ 98%
Chemical Name: 4-([(1R)-1-aminoethyl]-N-4-pyridinyl-trans-cyclohexanecarboxamide, dihydrochloride
Structure:

Properties
Physical Appearance: A crystalline solid
Storage: Product stable at -20°C as supplied. Protect from prolonged exposure to light. For long-term storage, store with a desiccant. Stable as supplied for 12 months from date of receipt.
Solubility:
- Water ≤ 90 mM
- PBS (pH 7.2) ≤ 230 mM
- DMSO ≤ 90 mM
- Absolute ethanol ≤ 3.1 mM

For example, to prepare 5 mM stock solution in PBS or water, resuspend 1 mg in 624 µL of PBS (pH 7.2) or water.

Prepare stock solution fresh before use. For long-term storage, 5 mM stock solutions (prepared in PBS or water) should be stored at -20°C and used within 1 months. Aliquot into working volumes to avoid repeated freeze-thaw cycles. The effect of storage of stock solution on compound performance should be tested for each application.

For use as a cell culture supplement, stock solution should be diluted into culture medium immediately before use. This product has been shown to be effective at a final concentration of 10 µM (Ungrin et al.; Watanabe et al.). Avoid final DMSO or absolute ethanol concentrations above 0.1% due to potential cell toxicity.
Published Applications

MAINTENANCE AND SELF-RENEWAL

- Enhances survival of human embryonic stem (ES) cells when they are dissociated to single cells by preventing dissociation-induced apoptosis (anoikis), thus increasing their cloning efficiency (Watanabe et al.).
- Improves embryoid body formation using forced-aggregation protocols (Ungrin et al.).
- Increases the survival of cryopreserved single human ES cells after thawing (Li et al.).
- Blocks apoptosis of mouse ES-derived neural precursors after dissociation and transplantation (Koyanagi et al.).

REPROGRAMMING

- Direct lineage reprogramming of fibroblasts to mature neurons, in combination with CHIR99021 (Catalog #72052), RepSox (Catalog #73792), Forskolin (Catalog #72112), SP600125 (Catalog #72642), G06983 (Catalog #72462), and Valproic Acid (Sodium Salt; Catalog #72292) (Hu et al.).

DIFFERENTIATION

- Improves survival of human ES cell monolayers at the initiation of differentiation protocols (Rezania et al.)

References


Related Small Molecules

For a complete list of small molecules available from STEMCELL Technologies, visit www.stemcell.com/smallmolecules, or contact us at techsupport@stemcell.com.

This product is hazardous. Please refer to the Safety Data Sheet (SDS).