Revision 1

Store at -20C

Y-27632

#13624

1 mg

Cell Signaling TECHNOLOGY®

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Background

Y-27632 is a potent and selective ATP-competitive inhibitor of Rho-associated kinases (ROCK), with K_i values of 0.22 µM and 0.30 µM for ROCK1 and ROCK2, respectively. *In vitro* kinase assays demonstrate that Y-27632 exhibits a 20-fold greater preference for ROCK when compared to citron kinase and protein kinase N (1). Research studies show that Y-27632 treatment of cells leads to inhibition of ROCK phosphorylation of myosin phosphatase subunit 1 (MYPT1) at both Thr853 and Thr696, with a much greater inhibition of Thr853 phosphorylation (2,3). Y-27632 selectively inhibits smooth-muscle contraction by inhibiting Ca^{2+} sensitization (4). Additional research indicates that Y-27632 inhibits dissociation-induced apoptosis of cultured human embryonic stem cells over numerous passages and increases cloning efficiency (5).

Molecular Formula

$C_{14}H_{21}N_3O \cdot 2HCl$

Molecular Weight

320.3 g/mol

Purity

>98%

CAS

129830-38-2

Solubility

Soluble in DMSO at 20mg/ml and H2O at 14mg/ml.

Storage

Store lyophilized or in solution at -20°C, desiccated. In lyophilized form, the chemical is stable for 24 months. Once in solution, use within 3 months to prevent loss of potency. Aliquot to avoid multiple freeze/thaw cycles.

Directions for Use

Y-27632 is supplied as a lyophilized powder. For a 10 mM stock, reconstitute the 1 mg in 312.2 µl DMSO. Working concentrations and length of treatment can vary depending on the desired effect, but it is typically used at 1-10 µM for 15 min-4 hr.

Background References

1. Ishizaki, T. et al. (2000) *Mol Pharmacol* 57, 976-83.
2. Garton, A.J. et al. (2008) *Methods Enzymol* 439, 491-500.
3. Ramachandran, C. et al. (2011) *Mol Vis* 17, 1877-90.
4. Uehata, M. et al. (1997) *Nature* 389, 990-4.
5. Watanabe, K. et al. (2007) *Nat Biotechnol* 25, 681-6.

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