Small Molecules

IWR-1-endo

WNT pathway inhibitor; AXIN2 stabilizer

Catalog # 72562 5 mg
72564 25 mg

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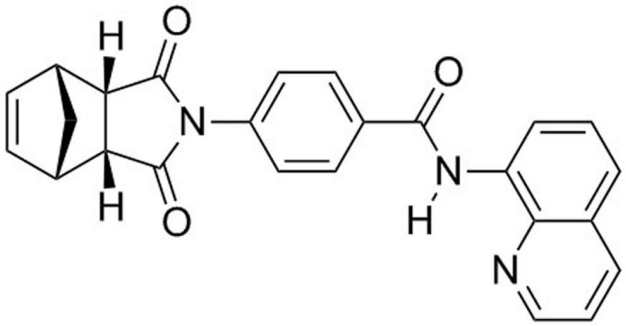
Product Description

IWR-1-endo is an inhibitor of WNT signaling. WNT proteins are small secreted proteins that are active in embryonic development, tissue homeostasis (Clevers), and tumorigenesis (Polakis; Reya et al.). WNT proteins bind to receptors on the cell surface, initiating a signaling cascade that leads to β-catenin accumulation and downstream gene transcription. IWR-1-endo is a potent inhibitor of the WNT response, blocking a cell-based WNT/β-catenin pathway reporter response with an IC_{50} value of 180 nM (Chen et al.). It inhibits WNT-induced accumulation of β-catenin, through stabilization of the destruction complex member AXIN2 (Chen et al.). The IWR-1-exo diastereomer exhibits much less activity against the WNT/β-catenin pathway and has been used as a control (Chen et al.).

Molecular Name:	IWR-1-endo
Alternative Names:	Not applicable
CAS Number:	1127442-82-3
Chemical Formula:	$C_{25}H_{19}N_3O_3$
Molecular Weight:	409.4 g/mol
Purity:	≥ 98%
Chemical Name:	4-[(3aR,4S,7R,7aS)-1,3,3a,4,7,7a-hexahydro-1,3-dioxo-4,7-methano-2H-isoindol-2-yl]-N-8-quinolinyl-benzamide
Structure:	

Properties

Physical Appearance:	A crystalline solid
Storage:	Product stable at -20°C as supplied. Protect from prolonged exposure to light. For product expiry date, please contact techsupport@stemcell.com.
Solubility:	· DMSO ≤ 45 mM For example, to prepare a 1 mM stock solution in DMSO, resuspend 1 mg in 2.44 mL of fresh DMSO. Prepare stock solution fresh before use. Information regarding stability of small molecules in solution has rarely been reported, however, as a general guide we recommend storage in DMF at -20°C. 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. Compound has low solubility in aqueous media. For use as a cell culture supplement, stock solution should be diluted into culture medium immediately before use. Avoid final DMF concentration above 0.1% due to potential cell toxicity.

Published Applications

MAINTENANCE AND SELF-RENEWAL
· Promotes self-renewal and maintains pluripotency of human embryonic stem cells and mouse Epi-stem cells when used in combination with CHIR99021 (Kim et al.).
DIFFERENTIATION
· Promotes differentiation of cardiomyocytes from human pluripotent stem cells (PSCs) that have been induced to mesoderm by addition of Activin A and/or BMP4 (Ren et al.; Willems et al.).
· Induces the differentiation of human PSC-derived alveolar epithelial type II (AETII) to AETI cells (Ghaedi et al.).

References

Chen B et al. (2009) Small molecule-mediated disruption of Wnt-dependent signaling in tissue regeneration and cancer. Nat Chem Biol 5(2): 100–7.
Clevers H. (2006) Wnt/beta-catenin signaling in development and disease. Cell 127(3): 469–80.
Ghaedi M et al. (2013) Human iPS cell-derived alveolar epithelium repopulates lung extracellular matrix. J Clin Invest 123(11): 4950–62.
Kim H et al. (2013) Modulation of β-catenin function maintains mouse epiblast stem cell and human embryonic stem cell self-renewal. Nat Commun 4: 2403.
Polakis P. (2000) Wnt signaling and cancer. Genes Dev 14(15): 1837–1851.
Ren Y et al. (2011) Small molecule Wnt inhibitors enhance the efficiency of BMP-4-directed cardiac differentiation of human pluripotent stem cells. J Mol Cell Cardiol 51(3): 280–7.
Reya T & Clevers H. (2005) Wnt signalling in stem cells and cancer. Nature 434(7035): 843–50.
Willems E et al. (2011) Small-molecule inhibitors of the Wnt pathway potently promote cardiomyocytes from human embryonic stem cell-derived mesoderm. Circ Res 109(4): 360–4.

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