Small Molecules

IWP-4

WNT pathway inhibitor; Inhibits Porcupine

Catalog # 72552 1 mg
72554 10 mg

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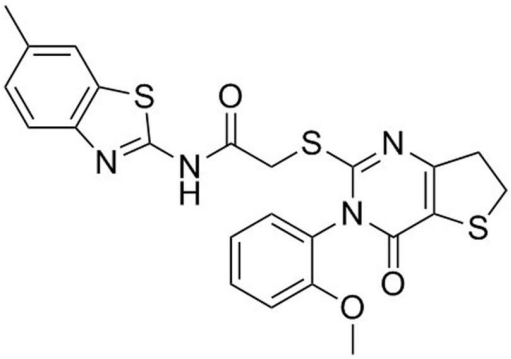
Product Description

Inhibitor of WNT Production-4 (IWP-4) is an inhibitor of WNT signaling. WNT proteins are small secreted proteins that are active in embryonic development, tissue homeostasis, and tumorigenesis (Clevers; 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. IWP-4 inactivates Porcupine, a membrane-bound O-acyltransferase responsible for palmitoylating WNT proteins, which is essential for their signaling ability and secretion (Chen et al.). IWP-4 impairs WNT pathway activity in vitro with an IC_{50} value of 25 nM (Chen et al.).

Molecular Name:	IWP-4
Alternative Names:	Inhibitor of Wnt Production-4
CAS Number:	686772-17-8
Chemical Formula:	$C_{23}H_{20}N_4O_3S_3$
Molecular Weight:	496.6 g/mol
Purity:	≥ 95%
Chemical Name:	N-(6-methyl-2-benzothiazolyl)-2-[[3,4,6,7-tetrahydro-3-(2-methoxyphenyl)-4-oxothieno[3,2-d]pyrimidin-2-yl]thio]-acetamide
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 ≤ 4.0 mM For example, to prepare a 2 mM stock solution in DMSO, resuspend 1 mg in 1.01 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 DMSO 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 DMSO concentration above 0.1% due to potential cell toxicity.

Published Applications

DIFFERENTIATION
· Promotes cardiomyocyte differentiation in human pluripotent stem cells after treatment with CHIR99021 (Lian et al. 2012, 2013; Sequiera et al.).
· Promotes cardiomyocyte differentiation in human embryonic stem cells following primitive streak induction with BMP4 and Activin A (Hudson 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.
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Lian X et al. (2013) Directed cardiomyocyte differentiation from human pluripotent stem cells by modulating Wnt/β-catenin signaling under fully defined conditions. Nat Protoc 8(1): 162–75.
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Polakis P. (2000) Wnt signaling and cancer. Genes Dev 14(15): 1837–1851.
Reya T & Clevers H. (2005) Wnt signalling in stem cells and cancer. Nature 434(7035): 843–50.
Sequiera GL et al. (2016) A Simple Protocol for the Generation of Cardiomyocytes from Human Pluripotent Stem Cells. Methods Mol Biol 1307: 379–83.

Related Small Molecules

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