Small Molecules

IWP-2

WNT pathway inhibitor; Inhibits Porcupine

Catalog #72122 1 mg
72124 10 mg

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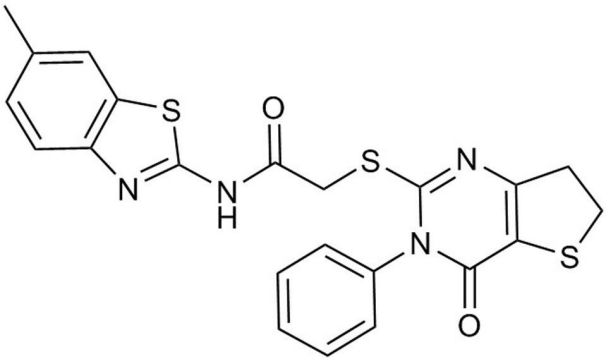
Product Description

IWP-2 inhibits the WNT pathway (IC_{50} = 27 nM) at the level of the pathway activator Porcupine. Porcupine is a membrane-bound acyltransferase that palmitoylates WNT proteins, which leads to WNT secretion and signaling capability (Chen et al.; Willert et al.).

Molecular Name:	IWP-2
Alternative Names:	Inhibitor of WNT Production-2
CAS Number:	686770-61-6
Chemical Formula:	$C_{22}H_{18}N_4O_2S_3$
Molecular Weight:	466.6 g/mol
Purity:	≥ 95%
Chemical Name:	N-(6-methyl-2-benzothiazolyl)-2-[(3,4,6,7-tetrahydro-4-oxo-3-phenylthieno[3,2-d]pyrimidin-2-yl)thio]-acetamide

Structure:



Properties

Physical Appearance: A crystalline solid

Storage: Product stable at -20°C as supplied. As a precaution, STEMCELL recommends storing all small molecules away from direct light. Stable as supplied for 12 months from date of receipt.

Solubility:

· DMSO ≤ 10 mM

For example, to prepare a 5 mM stock solution in DMSO, resuspend 1 mg in 429 µL of 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
· Suppresses self-renewal of mouse embryonic stem (ES) cells and supports their conversion to epiblast-like stem cells (Berge et al.).
· Inhibits maintenance and proliferation of mouse Lgr5+ intestinal and cochlear epithelial stem cells, demonstrating the importance of WNT signaling in these processes (Chai et al.; Farin et al.).
· Promotes cardiomyocyte differentiation from human pluripotent stem cells (Lian et al.; Minami et al.).

References

Berge D et al. (2011) Embryonic stem cells require Wnt proteins to prevent differentiation to epiblast stem cells. Nat Cell Biol 13(9): 1070–5.
Chai R et al. (2012) Wnt signaling induces proliferation of sensory precursors in the postnatal mouse cochlea. Proc Natl Acad Sci USA 109(21): 8167–72.
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.
Farin HF et al. (2012) Redundant sources of Wnt regulate intestinal stem cells and promote formation of Paneth cells. Gastroenterology 143(6): 1518–29.e7.
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.
Minami I et al. (2012) A small molecule that promotes cardiac differentiation of human pluripotent stem cells under defined, cytokine- and xeno-free conditions. Cell Rep 2(5): 1448–60.
Willert K et al. (2003) Wnt proteins are lipid-modified and can act as stem cell growth factors. Nature 423(6938): 448–52.

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