Small Molecules

Purmorphamine

Hedgehog pathway activator;
Activates Smoothened (SMO)

Catalog #	72202	1 mg
	72204	5 mg

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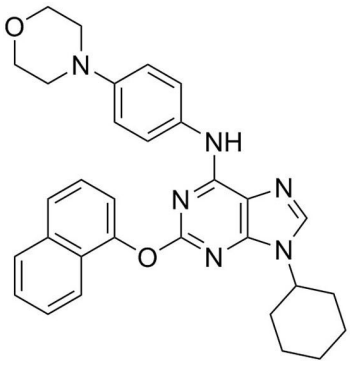
Product Description

Purmorphamine is a tri-substituted purine derivative that activates the Hedgehog pathway by directly binding to and activating the Hedgehog receptor Smoothened (EC_{50} = 1 µM; Sinha and Chen).

Molecular Name:	Purmorphamine
Alternative Names:	Not applicable
CAS Number:	483367-10-8
Chemical Formula:	$C_{31}H_{32}N_6O_2$
Molecular Weight:	520.6 g/mol
Purity:	≥ 98%
Chemical Name:	9-cyclohexyl-N-[4-(morpholinyl)phenyl]-2-(1-naphthalenyloxy)-9H-purin-6-amine
Structure:	

Properties

Physical Appearance:	A crystalline solid
Storage:	Product stable at -20°C as supplied. Protect from prolonged exposure to light. Stable as supplied for 12 months from date of receipt.
Solubility:	· DMSO ≤ 20 mM For example, to prepare a 10 mM stock solution in DMSO, resuspend 1 mg in 192 µL 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 differentiation of ventral spinal progenitor cells and motor neurons from human pluripotent stem cells (Hu & Zhang; Karumbayaram et al.; Li et al.).
· Promotes differentiation of osteoblasts from human and mouse mesenchymal cells (Beloti et al.; Wu et al. 2002; Wu et al. 2004).
· Inhibits differentiation and maturation of adipocytes from human mesenchymal cells (Fontaine et al.).

References

Beloti MM et al. (2005) Purmorphamine enhances osteogenic activity of human osteoblasts derived from bone marrow mesenchymal cells. Cell Biol Int 29(7): 537–41.
Fontaine C et al. (2008) Hedgehog signaling alters adipocyte maturation of human mesenchymal stem cells. Stem Cells 26(4): 1037–46.
Hu BY & Zhang SC. (2009) Differentiation of spinal motor neurons from pluripotent human stem cells. Nat Protoc 4(9): 1295–304.
Karumbayaram S et al. (2009) Directed differentiation of human-induced pluripotent stem cells generates active motor neurons. Stem Cells 27(4): 806–11.
Li XJ et al. (2008) Directed differentiation of ventral spinal progenitors and motor neurons from human embryonic stem cells by small molecules. Stem Cells 26(4): 886–93.
Sinha S & Chen JK. (2006) Purmorphamine activates the Hedgehog pathway by targeting Smoothened. Nat Chem Biol 2(1): 29–30.
Wu X et al. (2002) A small molecule with osteogenesis-inducing activity in multipotent mesenchymal progenitor cells. J Am Chem Soc 124(49): 14520–1.
Wu X et al. (2004) Purmorphamine induces osteogenesis by activation of the hedgehog signaling pathway. Chem Biol 11(9): 1229–38.

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