

Small Molecules

DMH1

Activin/Nodal/TGF β pathway inhibitor;
Inhibits ALK2

Catalog # 73632
73634

1 mg
10 mg



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TOLL FREE PHONE 1 800 667 0322 • PHONE +1 604 877 0713

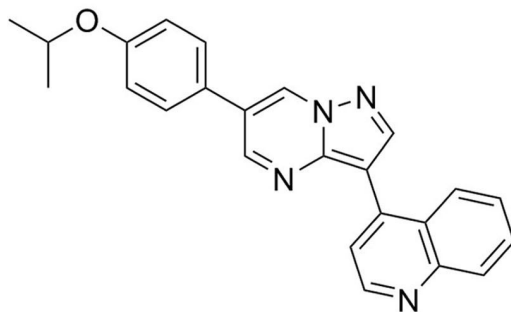
INFO@STEMCELL.COM • TECHSUPPORT@STEMCELL.COM

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Product Description

DMH1 (dorsomorphin homolog 1) is a selective inhibitor of activin receptor-like kinase 2 (ALK2; IC_{50} = 13 - 108 nM), a type I bone morphogenic protein (BMP) receptor (Hao et al.; Mohedas et al.). DMH1 exhibits no detectable inhibition of ALK4, ALK5, AMPK, KDR (VEGFR2), or PDGFR β , although it inhibits ALK1 and ALK3 at nanomolar concentrations (Hao et al.; Mohedas et al.).

Molecular Name: DMH1
Alternative Names: Dorsomorphin homolog 1
CAS Number: 1206711-16-1
Chemical Formula: C₂₄H₂₀N₄O
Molecular Weight: 380.4 g/mol
Purity: $\geq$ 98%
Chemical Name: 4-[6-(4-propan-2-yloxyphenyl)pyrazolo[1,5-a]pyrimidin-3-yl]quinoline
Structure:



Properties

Physical Appearance: A crystalline solid
Storage: Product stable at -20°C as supplied. Protect product from prolonged exposure to light. For long-term storage store with a desiccant.
Stable as supplied for 12 months from date of receipt.
Solubility: · DMSO $\leq$ 2.6 mM
· DMF $\leq$ 50 mM
For example, to prepare a 10 mM stock solution in DMF, resuspend 1 mg in 263 μ L of DMF.

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

- Induces differentiation of mouse embryonic stem cells to cardiomyocyte progenitor cells (Ao et al.).
- Induces differentiation of human induced pluripotent stem cells to SOX1- and PAX6-expressing neural precursor cells (Neely et al.).
- Dorsalizes the embryonic axis without disrupting the angiogenic process in early zebrafish embryos (Hao et al. 2010).

CANCER RESEARCH

- Suppresses non-small cell lung cancer cell growth, migration, and invasion in vitro, and attenuates xenografted lung tumor growth in vivo (Hao et al. 2014).
- Inhibits chemotherapeutic drug-induced autophagy response (Sheng et al.).

References

- Ao A et al. (2012) DMH1, a novel BMP small molecule inhibitor, increases cardiomyocyte progenitors and promotes cardiac differentiation in mouse embryonic stem cells. PLoS One 7(7): e41627.
- Hao J et al. (2014) DMH1, a small molecule inhibitor of BMP type I receptors, suppresses growth and invasion of lung cancer. PLoS One 9(6): e90748.
- Hao J et al. (2010) In vivo structure-activity relationship study of dorsomorphin analogues identifies selective VEGF and BMP inhibitors. ACS Chem Biol 5(2): 245–53.
- Mohedas AH et al. (2013) Development of an ALK2-biased BMP type I receptor kinase inhibitor. ACS Chem Biol 8(6): 1291–302.
- Neely MD et al. (2012) DMH1, a highly selective small molecule BMP inhibitor promotes neurogenesis of hiPSCs: comparison of PAX6 and SOX1 expression during neural induction. ACS Chem Neurosci 3(6): 482–91.
- Sakata T & Chen JK. (2011) Chemical “Jekyll and Hyde”s: small-molecule inhibitors of developmental signaling pathways. Chem Soc Rev 40(8): 4318–31.
- Sheng Y et al. (2015) DMH1 (4-[6-(4-isopropoxyphenyl)pyrazolo[1,5-a]pyrimidin-3-yl]quinoline) inhibits chemotherapeutic drug-induced autophagy. Acta Pharm Sin B 5(4): 330–6.

Related Small Molecules

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