Small Molecules

A 83-01

Activin/NODAL/TGF-β pathway inhibitor; Inhibits ALK5, ALK4, and ALK7

Catalog # 72022	5 mg
72024	10 mg
100-0245	50 mg
100-1041	150 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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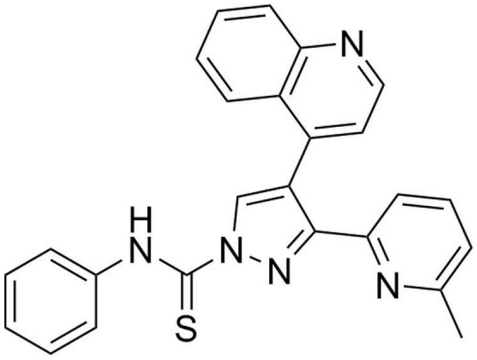
Product Description

A 83-01 is a potent inhibitor of activin receptor-like kinase (ALK) including ALK5 (type I transforming growth factor-β receptor), ALK4 (type IB activin receptor), and ALK7 (type I NODAL receptor) with IC_{50} = 12, 45, and 7.5 nM, respectively (Tojo et al.).

Molecular Name:	A 83-01
Alternative Names:	Not applicable
CAS Number:	909910-43-6
Chemical Formula:	$C_{25}H_{19}N_5S$
Molecular Weight:	421.5 g/mol
Purity:	≥ 95%
Chemical Name:	3-(6-methylpyridin-2-yl)-N-phenyl-4-quinolin-4-ylpyrazole-1-carbothioamide
Structure:	

Properties

Physical Appearance:	A crystalline solid
Storage:	Product stable at -20°C as supplied. Protect 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 ≤ 45 mM For example, to prepare a 10 mM stock solution in DMSO, resuspend 1 mg in 237 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

MAINTENANCE AND SELF-RENEWAL
· Facilitates the conversion of epiblast stem cells to the naïve pluripotent state (Li et al.; Zhou et al.).
REPROGRAMMING
· In combination with PD0325901 (Catalog #72182), enables OCT4-mediated reprogramming (Zhu et al.).
DIFFERENTIATION
· Inhibits mesoderm and endoderm specification (Zhang et al.).
· Disrupts epithelial to mesenchymal transition through inhibition of the SMAD signaling pathway (Tojo et al.).

References

Li W et al. (2009) Generation of rat and human induced pluripotent stem cells by combining genetic reprogramming and chemical inhibitors. Cell Stem Cell 4(1): 16–9.
Tojo M et al. (2005) The ALK-5 inhibitor A-83-01 inhibits Smad signaling and epithelial-to-mesenchymal transition by transforming growth factor-beta. Cancer Sci 96(11): 791–800.
Zhang M et al. (2016) Pharmacological reprogramming of fibroblasts into neural stem cells by signaling-directed transcriptional activation. Cell Stem Cell 18(5): 653–67.
Zhou H et al. (2010) Conversion of mouse epiblast stem cells to an earlier pluripotency state by small molecules. J Biol Chem 285(39): 29676–80.
Zhu S et al. (2010) Reprogramming of human primary somatic cells by OCT4 and chemical compounds. Cell Stem Cell 7(6): 651–5.

Related Small Molecules

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This product is hazardous. Please refer to the Safety Data Sheet (SDS).