

# Small Molecules

A 83-01

Activin/NODAL/TGF- $\beta$  pathway inhibitor; Inhibits ALK5, ALK4, and ALK7

Catalog # 72022  
72024  
100-0245

5 mg  
10 mg  
50 mg



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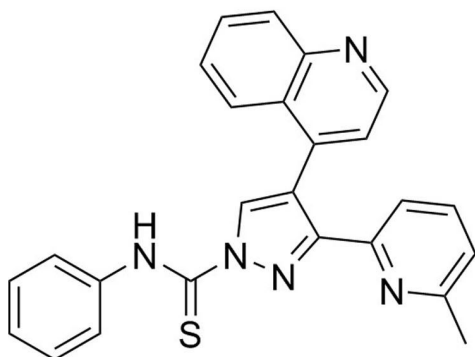
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## Product Description

A 83-01 is a potent inhibitor of activin receptor-like kinase (ALK) including ALK5 (type I transforming growth factor- $\beta$  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 <sub>25</sub> H <sub>19</sub> N <sub>5</sub> S                           |
| 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.<br>Stable as supplied for 12 months from date of receipt. |
| Solubility:          | · DMSO ≤ 30 mM<br>· Absolute ethanol ≤ 500 $\mu$ M<br>For example, to prepare a 10 mM stock solution in DMSO, resuspend 1 mg in 237 $\mu$ L 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.

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