

#14775 Store at -20°C

**SB431542**

1 mg

**Cell Signaling**  
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**For Research Use Only. Not for Use in Diagnostic Procedures.****Background**

SB431542 is a potent and selective ATP-competitive inhibitor of the transforming growth factor  $\beta$ 1 (TGF- $\beta$ 1) activin receptor-like kinases (ALK) -4, -5, and -7 (1-3). Research studies using cell-free kinase assays show that SB431542 inhibits ALK4 and ALK5 with  $IC_{50}$  values of 140 nM and 94 nM, respectively, and ALK7 with slightly less potency (2,3). The SB431542 inhibitor displays a 100-fold greater selectivity for ALK5 than 25 other kinases, including p38 MAPK and JNK1 (3). SB431542 inhibits Smad2 signaling induced by TGF- $\beta$  and activin, but has no effect on BMP-induced Smad1 activation mediated by ALK -2, -3, and -6 (3,4). Additional studies show that SB431542 enhances the proliferation and integrity of ESC-derived endothelial cells (5).

**Molecular Formula** $C_{22}H_{16}N_4O_3$ **Molecular Weight**

384.4 g/mol

**Purity**

&gt;98%

**CAS**

301836-41-9

**Solubility**

Soluble in DMSO at 30mg/ml and EtOH at 3mg/ml

**Storage**

Store lyophilized or in solution at -20°C, desiccated. Protect from light. In lyophilized form, the chemical is stable for 24 months. Once in solution, use within 3 months to prevent loss of potency. *Aliquot to avoid multiple freeze/thaw cycles.*

**Directions for Use:**

SB431542 is supplied as a lyophilized powder. For a 10 mM stock, reconstitute the 1 mg in 260.15  $\mu$ l DMSO. Working concentrations and length of treatment can vary depending on the desired effect, but it is typically used as a pretreatment at 1-10  $\mu$ M for 0.5-2 hr prior to treating with a stimulator. It can also be used alone, with varying treatment times lasting up to 24 hr.

**Background References**

- Callahan, J.F. et al. (2002) *J Med Chem* 45, 999-1001.
- Laping, N.J. et al. (2002) *Mol Pharmacol* 62, 58-64.
- Inman, G.J. et al. (2002) *Mol Pharmacol* 62, 65-74.
- Daly, A.C. et al. (2008) *Mol Cell Biol* 28, 6889-902.
- Watabe, T. et al. (2003) *J Cell Biol* 163, 1303-11.

**Cross-Reactivity Key**

**H:** human **M:** mouse **R:** rat **Hm:** hamster **Mk:** monkey **Vir:** virus **Mi:** mink **C:** chicken **Dm:** D. melanogaster  
**X:** Xenopus **Z:** zebrafish **B:** bovine **Dg:** dog **Pg:** pig **Sc:** S. cerevisiae **Ce:** C. elegans **Hr:** horse  
**GP:** Guinea Pig **Rab:** rabbit **All:** all species expected

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