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# DATASHEET

SB 431542

#### **Product overview**

SB 431542 Name Cat No HB3555 **Biological action** Inhibitor >98% **Purity** 

Description Potent, selective TGF-BRI ALK5, ALK4, ALK7 inhibitor. Induces sheet formation, proliferation,

differentiation of ESC-derived endothelial cells and replaces SOX2 in reprogramming protocols.3D

growth matrix component and can be used in production of organoids.

### **Biological Data**

**Biological description** 

Potent and selective transforming growth factor β type I receptor (TGF-βRI) actvin receptor-like kinase ALK5, ALK4 and ALK7 inhibitor ( $IC_{50} = 94 \text{ nM}$  at ALK5).

Specifically inhibits Smad2/3 activation and blocks TGF-β signal transduction.

Maintains the undifferentiated state of mouse embryonic stem cells (ESCs).

Also induces sheet formation, proliferation, differentiation of ESC-derived endothelial cells.

It additionally can be used as a 3D growth matrix component and can be used in production of organoids (e.g. brain/ blood vessel organoids).

It can also be used to replace the SOX2 factor in reprogramming protocols.

## **Solubility & Handling**

Solubility overview Storage instructions Storage of solutions

Soluble in DMSO (100mM) and ethanol (10mM)

Room temperature

Prepare and use solutions on the same day if possible. Store solutions at -20°C for up to one month if storage is required. Equilibrate to RT and ensure the solution is precipitate free before use.

Stable for ambient temperature shipping. Follow storage instructions on receipt.

**Shipping Conditions Important** 

This product is for RESEARCH USE ONLY and is not intended for therapeutic or diagnostic use. Not

for human or veterinary use.

#### **Chemical Data**

**Chemical name** Molecular Weight **Chemical structure**  4-[4-(1,3-benzodioxol-5-yl)-5-(2-pyridinyl)-1H-imidazol-2-yl]-benzamide

384.4

Molecular Formula **CAS Number PubChem identifier**   $C_{22}H_{16}N_4O_3$ 301836-41-9 4521392

**SMILES** C1OC2=C(O1)C=C(C=C2)C3=C(NC(=N3)C4=CC=C(C=C4)C(=O)N)C5=CC=CC=N5

**Source** Synthetic

InChi InChi=1S/C22H16N4O3/c23-21(27)13-4-6-14(7-5-13)22-25-19(20(26-22)16-3-1-2-10-24-16)15-8-9-

17-18(11-15)29-12-28-17/h1-11H,12H2,(H2,23,27)(H,25,26)

InChiKey FHYUGAJXYORMHI-UHFFFAOYSA-N

MDL number MFCD11045982 Appearance Yellow solid

### References

Inhibition of transforming growth factor (TGF)-beta1-induced extracellular matrix with a novel inhibitor of the TGF-beta type I receptor kinase activity: SB-431542.

Laping et al (2002) Mol Pharmacol 62(1) **PubMedID** 12065755

SB-431542 is a potent and specific inhibitor of transforming growth factor-beta superfamily type I ALK receptors ALK4, ALK5, and ALK7.

Inman et al (2002) Mol Pharmacol 62(1) **PubMedID**12065756

TGF-beta receptor kinase inhibitor enhances growth and integrity of embryonic stem cell-derived endothelial cells.

Watabe et al (2003) J Cell Biol 163(6)

PubMedID 14676305

Mechanism of SB431542 in inhibiting mouse embryonic stem cell differentiation.

Du et al (2014) Cell Signal 26(10)

PubMedID 24949833