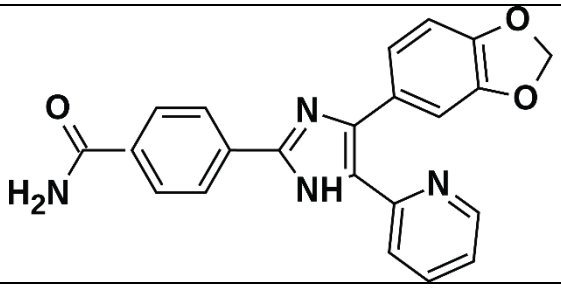
TrailBio® SB-431542 User Instructions

Product Configurations

Catalog Number	Size	Quantity
TB02309	5 mg	1 vial
TB46416	25 mg	1 vial

Product Description

Category	Specification
Product	SB-431542
Synonyms	TGF-β RI Kinase Inhibitor VI, SB431542
CAS Number	301836-41-9
MDL Number	MFCD11045982
Formula	$C_{22}H_{16}N_4O_3$
Molecular Weight	384.39 g/mol
Storage (Solid)	-20 °C, for up to 3 years or 4 °C for up to 2 years
Storage (Solution)	-80 °C for up to 2 years or -20 °C for up to 1 year
Shipping	Ambient temperature
Chemical Structure	

Quality & Analytical Specifications

Test Parameter	Specification
Solid Appearance (Color)	Off-white to yellow
Purity	≥98%

Solubility

Solvent	Solubility	Notes
DMSO	≤50 mg/ml (130 mM)	may require sonication
Ethanol	≤11 mg/ml (29 mM)	may require sonication and warming

Solution Preparation Guide

Amount	1 mM	5 mM	10 mM
5 mg	13.008 ml	2.602 ml	1.301 ml
10 mg	26.015 ml	5.203 ml	2.602 ml
25 mg	65.038 ml	13.008 ml	6.504 ml

Biological Description

SB-431542 is a selective inhibitor of TGF-β receptor kinases, targeting ALK4, ALK5, and ALK7. It suppresses TGF-β–mediated signaling, including transcriptional activity, gene expression, apoptosis, and growth inhibition. This makes it useful for directed differentiation, studying cancer and cellular signaling.

Associated Pathways & Applications

Category	Description
Associated Pathways	TGF-β/Smad/; Activin/Nodal; SMAD2/3; ALK receptor signaling; stem cell/Wnt
Applications	Apoptosis; stem cell culture; directed differentiation; TGF-β pathway studies; organoid applications

IC_{50} & Targets

Target	IC_{50}
ALK4	1 µM
ALK5	0.75 µM
ALK7	2 µM

Notes

- When using DMSO-based stock solutions, maintain a final DMSO concentration of <0.5% in cell culture applications to minimize potential cellular toxicity, unless a higher concentration has been validated for the specific cell type.
- Avoid repeated freeze-thaw cycles. Prepare single-use aliquots when possible.
- Compound may collect on the vial cap or neck during shipping; centrifuge briefly before opening to bring contents to the bottom.
- Certificate of Analysis (CoA) available upon request. Please contact support@trailbio.com.

Also available from Trailhead Biosystems®

Cells

- TrailBio® Vascular Leptomeningeal Cells (Cat No. EC040003010)
- TrailBio® Hematopoietic Progenitor Cells (Cat No. ME060001020)
- TrailBio® Endothelial Cells (Cat No. ME010101021)

Small Molecules

- TrailBio® Y-27632 dihydrochloride (Cat No. TB 28056)
- TrailBio® Cytarabine (Ara-C) (Cat No. TB 47622)
- TrailBio® SB-431542 (Cat No. TB 46416)
- TrailBio® LDN-193189 dihydrochloride (Cat No. TB 86388)
- TrailBio® CHIR-99021 monohydrochloride (Cat No. TB 54925)

Services

- Custom iPSC Differentiation

For details of the above products and services, visit www.trailbio.com.