bio-techne
TOCRIS

Print Date: Nov 3rd 2025

Certificate of Analysis

www.tocris.com

Product Name: **SB 431542** **Catalog No.: 1614** **Batch No.: 18**

CAS Number: 301836-41-9

IUPAC Name: 4-[4-(1,3-benzodioxol-5-yl)-5-(2-pyridinyl)-1*H*-imidazol-2-yl]benzamide

1. PHYSICAL AND CHEMICAL PROPERTIES

Batch Molecular Formula: $C_{22}H_{16}N_4O_3.1¾H_2O$

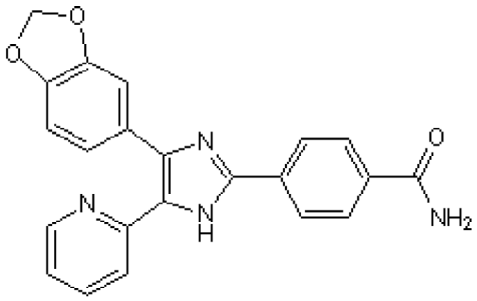
Batch Molecular Weight: 415.91

Physical Appearance: Yellow solid

Solubility: ethanol to 10 mM
DMSO to 100 mM with gentle warming

Storage: Store at RT

Batch Molecular Structure:



2. ANALYTICAL DATA

HPLC: Shows 99.8% purity

^{1}H NMR: Consistent with structure

Mass Spectrum: Consistent with structure

Microanalysis:

	Carbon	Hydrogen	Nitrogen
Theoretical	63.53	4.73	13.47
Found	63.04	4.78	13.25

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Description:

SB 431542 is a potent and selective inhibitor of the transforming growth factor-β (TGF-β) type I receptor/ALK5 (IC_{50} = 94 nM), and its relatives ALK4 and ALK7. Suppresses TGF-β-induced proliferation of human osteosarcoma cells. Replaces SOX2 in reprogramming of fibroblasts into iPSCs. Stimulates proliferation, differentiation and sheet formation of ESC-derived endothelial cells. Inhibits TGF-β-induced EMT, migration, invasion and VEGF secretion in several human cancer cell lines. Also used in a protocol to generate brain organoids from human iPSCs. Can be used in a small molecule cocktail to generate 3D culture of lung alv... Please see product specific page on www.tocris.com for full description.

Physical and Chemical Properties:

Batch Molecular Formula: $C_{22}H_{16}N_4O_3.1¾H_2O$

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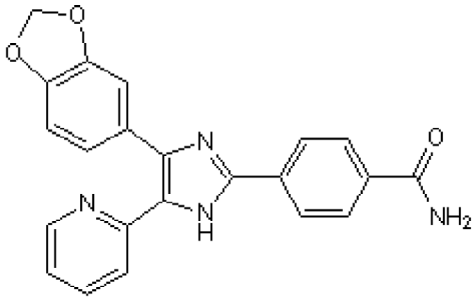
Physical Appearance: Yellow solid

Minimum Purity: ≥99%

Batch Molecular Structure:



Storage: Store at RT

Solubility & Usage Info:

ethanol to 10 mM

DMSO to 100 mM with gentle warming

When purchased as a 1mg unit, this product is supplied in lyophilized form. It may appear as a solid, gel or film and be very hard to visualize. Solutions should be made by adding solvent directly to the vial. The vial should then be vortexed vigorously to ensure the product has completely dissolved.

Stability and Solubility Advice:

Some solutions can be difficult to obtain and can be encouraged by rapid stirring, sonication or gentle warming (in a 45-60°C water bath).

Information concerning product stability, particularly in solution, has rarely been reported and in most cases we can only offer a general guide. *Unless contradicted by product-specific protocols or instructions, our standard recommendations apply:

SOLIDS: Provided storage is as stated on the product label and the vial is kept tightly sealed, the product can be stored for up to 6 months from date of receipt.

SOLUTIONS: We recommend that stock solutions, once prepared, are stored aliquoted in tightly sealed vials at -20°C or below and used within 1 month. Wherever possible solutions should be made up and used on the same day.

References:

Schafer *et al* (2023) An *in vivo* neuroimmune organoid model to study human microglia phenotypes. Cell ***186*** 2111. PMID: 37172564.

Halder *et al* (2005) A specific inhibitor of TGF-beta receptor kinase, SB-431542, as a potent antitumor agent for human cancers. Neoplasia ***7*** 509. PMID: 15967103.

Matsuyama *et al* (2003) SB-431542 and Gle. inhibit transforming growth factor-β-induced proliferation of human osteosarcoma cells. Cancer Res. ***63*** 7791. PMID: 14633705.