

SB-431542

TGF β superfamily Type I activin receptor-like kinase Inhibitor

SB-431542 is a potent and selective inhibitor of the transforming growth factor- β (TGF- β) type I receptor, specifically targeting ALK4, ALK5, and ALK7. It is a cell-permeable compound that effectively inhibits SMAD2 phosphorylation, with IC₅₀ values of 140 nM and 94 nM for ALK4 and ALK5, respectively.

This compound is widely used in research to study TGF- β signaling pathways and has applications in various biological processes, including the suppression of TGF- β -induced proliferation in human osteosarcoma cells and the reprogramming of fibroblasts into induced pluripotent stem cells (iPSCs), as well as apoptosis and growth suppression. Additionally, SB-431542 has been shown to improve the efficiency of generating human iPSCs and is used in protocols for differentiating stem cells into specific cell types.

Key features and applications include:

- **Cancer Research:** SB-431542 is used to investigate the role of TGF- β signaling in cancer progression and metastasis. It helps in understanding how TGF- β influences tumor growth and the tumor microenvironment.
- **Stem Cell Research:** It is employed to study the differentiation of stem cells. By inhibiting TGF- β signaling, researchers can explore how stem cells differentiate into various cell types.
- **Tissue Engineering:** SB-431542 is used in tissue engineering to control the differentiation of cells and to prevent fibrosis in engineered tissues.

Relevant disease states include:

- **Fibrosis:** SB-431542 is used to study and potentially treat various fibrotic diseases. For example, it has been shown to prevent arthrofibrosis, a condition characterized by joint stiffening and scar tissue formation.
- **Muscle Injuries:** It has been used in research to reduce fibrosis and fatty infiltration in muscle injuries, such as rotator cuff tears.

- GMP format available

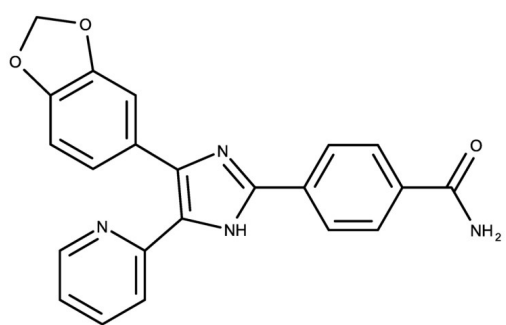
Ordering Information

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ENZ-CHM331-0025	25mg
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Manuals, SDS & CofA

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Handling & Storage

Use/Stability	As indicated on product label or CoA when stored as recommended. Solutions in DMSO or ethanol may be stored at -20°C for up to 3 months.
Handling	Keep container tightly closed in a dry and well-ventilated place.
Short Term Storage	Ambient
Long Term Storage	Ambient
Shipping	Ambient Temperature

Regulatory Status

RUO - Research Use Only

Product Details

Alternative Name	4-[4-(3,4-Methylenedioxyphenyl)-5-(2-pyridyl)-1H-imidazol-2-yl]-benzamide
Appearance	Yellow solid.
CAS	301836-41-9
Couple Target	Activin receptor, TGF-beta receptor
Couple Type	Inhibitor
Formula	$C_{22}H_{16}N_4O_3$
Identity	Determined by NMR.
MW	384.4
Purity	≥99% (HPLC)
Solubility	Soluble in DMSO (up to 30 mg/mL). Soluble in ethanol (up to 3 mg/mL).



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