SB-431542

TGFβ 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 IC $_{50}$ 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

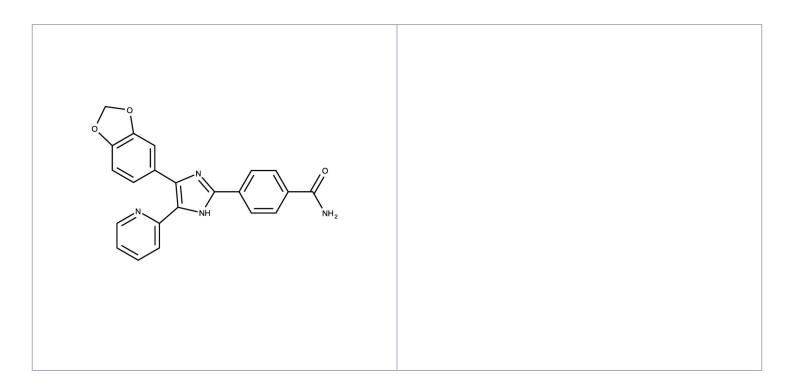
Ordering Information

ENZ-CHM331-0025

25mg

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.

Keep container tightly closed in a dry and well-ventilated place. Handling

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

Yellow solid. **Appearance**

CAS 301836-41-9

Couple Target Activin receptor, TGF-beta receptor

Couple Type Inhibitor

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

Identity Determined by NMR.

384.4 MW

Purity ≥99% (HPLC)

Soluble in DMSO (up to 30 mg/mL). Soluble in ethanol (up Solubility

to 3 mg/mL).