Data Sheet (Cat.No.T207178)

TargetMol

Antifibrotic agent 1

Chemical Properties

CAS No. :

Formula: C27H23ClN6O2

Molecular Weight:

Storage: Powder: -20°C for 3 years | In solvent: -80°C for 1 year
Actual storage temperature shall be subject to the COA.

Biological Description

Description	Antifibrotic agent 1 is an orally active medication designed to treat idiopathic pulmonary fibrosis (IPF). It effectively mitigates IPF-related processes, including TGF-β-induced epithelial-mesenchymal transition (EMT) and fibroblast-to-myofibroblast transition (FMT), as well as profibrotic M2 polarization. Antifibrotic agent 1 selectively inhibits CSF-1R, PDGFR-α, and Src family kinases (SFKs), while sparing VEGFR, FGFR, and Abl to minimize off-target toxicity. In a bleomycin (BLM)-induced pulmonary fibrosis mouse model, it demonstrates strong antifibrotic activity.
Targets(IC50)	c-Fms,Others,PDGFR,Src
In vitro	Antifibrotic agent 1 (Compound 22) exhibits significant antifibrotic activity, inhibiting 95.0% of COL1A1 expression in A549 cells at a concentration of 1 μM, with an IC50 of 40.5 nM, when used at 0.001-10 μM for 48 hours. It demonstrates antifibrotic effects in A549, HEK293, and L02 cells with low cytotoxicity (C50 > 200 μM) at concentrations of 1-200 μM. Additionally, it reduces COL1A1 protein levels in a dose-dependent manner in TGF-β-induced A549, HFL1, and HLFs cells, thereby inhibiting EMT and FMT processes related to IPF when used at 0.1-10 μM over 48 hours. At 10 μM, it selectively inhibits polarization of bone marrow-derived macrophages (BMDM) to the profibrotic M2 phenotype. Moreover, at 1-100 nM, it selectively inhibits CSF-1R, PDGFR-α, and SFKs, mitigating the progression of IPF while sparing VEGFR, FGFR, and Abl, thus minimizing off-target toxicity.
In vivo	Compound 22 (60 mg/kg, oral, once daily for 14 days) exhibits moderate oral bioavailability and demonstrates a good safety profile, showing no significant hepatotoxicity or nephrotoxicity at doses up to 60 mg/kg in a BLM-induced pulmonary fibrosis mouse model. Additionally, when administered at 60 mg/kg orally once daily for 10 days, this antifibrotic agent effectively ameliorates lung fibrosis in the same model, significantly reducing inflammation, decreasing M2-associated profibrotic cytokines, and improving lung function.

Tel:781-999-4286 E_mail:info@targetmol.com Address:34 Washington Street,Wellesley Hills,MA 02481