Delgocitinib

Cat. No.: HY-109053

CAS No.: 1263774-59-9

Molecular Formula: $C_{16}H_{18}N_6O$

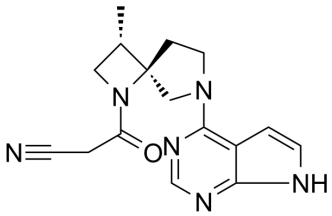
Molecular Weight: 310.35

Target: JAK

Pathway: Epigenetics; JAK/STAT Signaling; Protein Tyrosine Kinase/RTK; Stem Cell/Wnt

Storage:

Powder	-20°C	3 years
	4°C	2 years
In solvent	-80°C	2 years
	-20°C	1 year



SOLVENT & SOLUBILITY

In Vitro

DMSO : ≥ 58 mg/mL (186.89 mM)

* "≥" means soluble, but saturation unknown.

Preparing Stock Solutions

Solvent / Mass / Concentration	1 mg	5 mg	10 mg
1 mM	3.2222 mL	16.1108 mL	32.2217 mL
5 mM	0.6444 mL	3.2222 mL	6.4443 mL
10 mM	0.3222 mL	1.6111 mL	3.2222 mL

Please refer to the solubility information to select the appropriate solvent.

In Vivo

1. Add each solvent one by one: 5% DMSO >> 40% PEG300 >> 5% Tween-80 >> 50% saline
   Solubility: ≥ 2.5 mg/mL (8.06 mM); Clear solution
2. Add each solvent one by one: 5% DMSO >> 95% (20% SBE-β-CD in saline)
   Solubility: ≥ 2.5 mg/mL (8.06 mM); Clear solution
3. Add each solvent one by one: 1% DMSO >> 99% saline
   Solubility: ≥ 0.5 mg/mL (1.61 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Delgocitinib (JTE-052) is a specific JAK inhibitor with IC_{50}s of 2.8, 2.6, 13 and 58 nM for JAK1, JAK2, JAK3 and Tyk2, respectively[1].

IC_{50} & Target

JAK2	JAK1	JAK3	Tyk2
2.6 nM (IC_{50})	2.8 nM (IC_{50})	13 nM (IC_{50})	58 nM (IC_{50})

In Vitro	In the enzymatic assays, Delgocitinib potently inhibits all of the JAK subtypes with IC_{50} values of 2.8±0.6, 2.6±0.2, 13±0 and 58±9 nM for JAK1, JAK2, JAK3 and Tyk2, respectively. Lineweaver-Burk plots show that the inhibition mode of Delgocitinib toward all JAKs is competitive with ATP with K_i values of 2.1±0.3, 1.7±0.0, 5.5±0.3 and 14±1 nM for JAK1, JAK2, JAK3 and Tyk2, respectively. In these cell-based cytokine signaling assays, Delgocitinib inhibits the phosphorylation of Stat proteins induced by IL-2, IL-6, IL-23, GM-CSF, and IFN-α with IC_{50} values of 40±9, 33±14, 84±11, 304±22 and 18±3 nM, respectively. Delgocitinib also inhibits IL-2-induced proliferation of T cells in a concentration-dependent manner (IC_{50}=8.9±3.6 nM), and its potency is similar to that of CP-690550 (IC_{50}=16 nM)[1]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.
In Vivo	Delgocitinib decreases the IFN-γ production, but the potency of the 1-h prior administration is higher than that of the 6-h prior administration (ED_{50}=0.24 versus 1.3 mg/kg). In the administration from day 1, Delgocitinib prevents the development of hind paw swelling and histological changes of inflammatory cell infiltration and synovial cell hyperplasia. Delgocitinib inhibits radiographic and histological changes of bone destruction and cartilage destruction. In the administration from day 15, Delgocitinib decreases the paw swelling in a dose-dependent manner. In addition, Delgocitinib ameliorates the inflammatory cell infiltration, synovial cell hyperplasia, and cartilage/bone destructions in the histological and radiographic examinations at the end of the study[1]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

PROTOCOL

Cell Assay [1]	For determination of IL-2-induced T cell proliferation, human T cells are precultured with 10 μg/mL PHA-M for 3 days and plated in 96-well plates at 1.0×10^4 cells/well in the presence or absence of various concentrations of Delgocitinib. Following preincubation with Delgocitinib for 30 min at 37°C, the cells are stimulated by adding 20 ng/mL recombinant human IL-2 to each well and incubated for 3 days at 37°C under 5 % CO_2. After completion of the culture period, the cells are harvested with a 96-well harvester and counted in a scintillation counter[1]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.
Animal Administration [1]	Lewis rats are used in this study. First, collagen-induced arthritis (CIA) is induced in rats. Lewis rats are immunized with 1 mL of the emulsion (1 mg of type II collagen) via ten intradermal injections on the back under anesthesia. The rats are then challenged with 0.2 mL of the emulsion injected into the base of the tail on day 8 under anesthesia. Delgocitinib is given orally once daily from day 1 to day 21 (preventive administration) or from day 15 to day 28 (therapeutic administration). After arthritis induction, the hind paw volume is measured by a water displacement method using a plethysmometer. On day 22 or day 29, the rats are euthanized, and their hind paws are excised and X-rayed or processed for histological evaluation[1]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

CUSTOMER VALIDATION

- J Clin Med. 2020 Mar 24;9(3):891.

See more customer validations on www.MedChemExpress.com

REFERENCES

[1]. Tanimoto A, et al. Pharmacological properties of JTE-052: a novel potent JAK inhibitor that suppresses various inflammatory responses in vitro and in vivo. Inflamm Res. 2015 Jan;64(1):41-51.

Caution: Product has not been fully validated for medical applications. For research use only.

Tel: 609-228-6898 Fax: 609-228-5909 E-mail: tech@MedChemExpress.com
Address: 1 Deer Park Dr, Suite Q, Monmouth Junction, NJ 08852, USA