Vidofludimus

Cat. No.: HY-14908

CAS No.: 717824-30-1

Molecular Formula: $C_{20}H_{18}FNO_4$

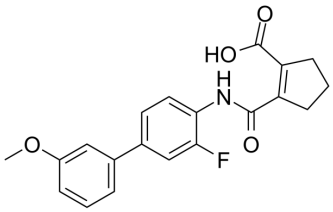
Molecular Weight: 355.36

Target: Interleukin Related; Dihydroorotate Dehydrogenase; FXR

Pathway: Immunology/Inflammation; Metabolic Enzyme/Protease

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 : ≥ 46 mg/mL (129.45 mM)

* "≥" means soluble, but saturation unknown.

Preparing Stock Solutions	Solvent / Mass / Concentration	1 mg	5 mg	10 mg
	1 mM	2.8140 mL	14.0702 mL	28.1405 mL
	5 mM	0.5628 mL	2.8140 mL	5.6281 mL
	10 mM	0.2814 mL	1.4070 mL	2.8140 mL

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

In Vivo

1. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: 2.5 mg/mL (7.04 mM); Suspended solution; Need ultrasonic
2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: 2.5 mg/mL (7.04 mM); Suspended solution; Need ultrasonic
3. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.5 mg/mL (7.04 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Vidofludimus is an orally active inhibitor for dihydroorotate dehydrogenase (DHODH) and also is a novel modulator for farnesoid X receptor (FXR). Vidofludimus, as an immunomodulatory agent, can be used for the research of autoimmune disorders such as inflammatory bowel disease (IBD). Vidofludimus also can be used for the research of fatty liver by targeting FXR[1][2][3].

IC_{50} & Target

IL-17

In Vitro

Vidofludimus (0-1 μM) selectively activats FXR in a concentration dependent manner with an EC_{50} value of about 450 nM in inducing the recruitment of various coactivator LXXLL motifs[1].
Vidofludimus (0-8 μM) blocks nuclear translocation of p65 by suppressing IKK-IκB-NF-κB pathway[1].
Vidofludimus has inhibitory activity for human DHODH with an IC_{50} value of 160 nM[2].
Vidofludimus inhibits dihydro-orotate dehydrogenase and lymphocyte proliferation in vitro[3].
Vidofludimus inhibits interleukin (IL)-17 secretion in vitro independently of effects on lymphocyte proliferation[3].
Vidofludimus completely blocks IL-23 + IL-1β-stimulated secretion of IL-17 by colonic strips in ex vivo[3].
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Western Blot Analysis[1]

Cell Line:	HepG2 cells or MEFs
Concentration:	2, 8 μM
Incubation Time:	1 h
Result:	Inhibited of TNFα-induced IKKα/β phosphorylation and IκBα degradation.

RT-PCR[1]

Cell Line:	HepG2 cells
Concentration:	5 μM
Incubation Time:	24 h
Result:	Inhibited the increase of NF-κB target genes MCP-1 and CXCL-2 upon TNFα stimulation.

In Vivo

Vidofludimus (i.p.; once daily; for 14 days) exerts effects on dextran sodium sulfate (DSS) induced colitis in an FXR-dependent manner in vivo[1].
Vidofludimus (p.o; 60 mg/kg; for 6 days) effectively improves many parameters of TNBS-induced colitis in rats and has inhibitory effects on colonic STAT3 and IL-17[3].
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Animal Model:	homozygous FXR deficient (FXR KO) mice[1] (10-week-old, male)
Dosage:	20 mg/kg
Administration:	oral, 20 mg/kg/day
Result:	Revealed multifocal inflammatory cell infiltration and edema with crypt and epithelial cell destruction and ulceration.

Animal Model:	NAFLD Model[1] (10-11 weeks old male obese Lepob/ob C57BL/6 (ob/ob) mice)
Dosage:	10 mg/kg
Administration:	intraperitoneally, once daily, for 14 days
Result:	Significantly reduced body weight loss, prevented colonic shortening, decreased histological scores, and disease activity index (DAI) scores in WT mice. Significantly decreased colonic mRNA expression of the pro-inflammatorygenes interleukin (IL)-1β, IL-6, IL-17, and prostaglandin-endoperoxide synthase 2 (COX-2).

Animal Model:	Wistar rats[3]
Dosage:	60 mg/kg
Administration:	p.o., for 6 days
Result:	Effectively reduced macroscopic and histological pathology and the numbers of CD3+ T cells in vivo. Reduced nuclear signal transducer and activator of transcription 3 (STAT3) binding and IL-17 levels.

REFERENCES

[1]. Yanlin Zhu, et al. Repositioning an Immunomodulatory Drug Vidofludimus as a Farnesoid X Receptor Modulator With Therapeutic Effects on NAFLD. Front Pharmacol. 2020 May 14;11:590.

[2]. Andreas Muehler, et al. Vidofludimus calcium, a next generation DHODH inhibitor for the Treatment of relapsing-remitting multiple sclerosis. Mult Scler Relat Disord. 2020 Aug;43:102129.

[3]. Leo R Fitzpatrick, et al. Vidofludimus inhibits colonic interleukin-17 and improves hapten-induced colitis in rats by a unique dual mode of action. J Pharmacol Exp Ther. 2012 Sep;342(3):850-60.

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