BMS-687453

Cat. No.: HY-10678

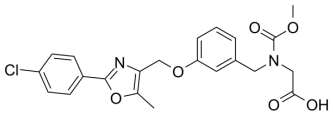
CAS No.: 1000998-59-3

Molecular Formula: $C_{22}H_{21}ClN_2O_6$

Molecular Weight: 444.86

Target: PPAR

Pathway: Cell Cycle/DNA Damage; Metabolic Enzyme/Protease; Vitamin D Related/Nuclear Receptor



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 : ≥ 100 mg/mL (224.79 mM)

* "≥" means soluble, but saturation unknown.

Preparing Stock Solutions

Solvent / Mass / Concentration	1 mg	5 mg	10 mg
1 mM	2.2479 mL	11.2395 mL	22.4790 mL
5 mM	0.4496 mL	2.2479 mL	4.4958 mL
10 mM	0.2248 mL	1.1239 mL	2.2479 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 (5.62 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: 2.5 mg/mL (5.62 mM); Suspended solution; Need ultrasonic
3. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.5 mg/mL (5.62 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

BMS-687453 is a potent and selective PPARα agonist, with an EC_{50} and IC_{50} of 10 nM and 260 nM for human PPARα and 4100 nM and >15000 nM for PPARγ in PPAR-GAL4 transactivation assays.

IC_{50} & Target

PPARα

260 nM (IC_{50}, Human PPARα)

In Vitro	BMS-687453 is a potent and selective PPARα agonist, with an EC_{50} and IC_{50} of 10 nM and 260 nM for human PPARα and -410-fold and more than 57-fold selectivity vs human PPARγ of 4100 nM and >15000 nM in PPAR-GAL4 transactivation assays. BMS-687453 exhibits high PPARα potency (EC_{50} = 47 nM) with -50-fold selectivity vs PPARγ (EC_{50} = 2400 nM) in HepG2 cells. However, BMS-687453 shows less potent activities in rodent PPARα functional assays, with a moderate EC_{50} of 426 nM for mouse and 488 nM for hamster but remains a full PPARα agonist in both species[1]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.
In Vivo	BMS-687453 (10, 50, 100, p.o.) dose-dependently increases serum ApoA1 protein levels and low-density lipoprotein-cholesterol (LDLc) levels in mice. BMS-687453 (1, 3, 10 mg/kg, p.o.) decreases HDLc levels in high fat-fed hamsters[1]. BMS-687453 induces PDK4 mRNA in the liver, with ED_{50} value of 0.24 mg/kg[2]. BMS-687453 (300 mg/kg, p.o.) causes skeletal myofiber degeneration and necrosis characterized by observed discoid changes, myofibril lysis, hyalinization, and cellular infiltration in male rats. BMS-687453 (300 mg/kg, p.o.) induces a mild toxicity in both fast and slow-twitch muscles in male rats[3]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

PROTOCOL

Kinase Assay [1]	A homogeneous, fluorescent polarization PPARα and PPARγ binding assay is used as the primary screen for determining the PPARα and PPARγ binding affinity of compounds. The human functional activity of PPARα and PPARγ agonists is determined by using the GAL4-LBD assays. The in vitro hamster, rat, and mouse PPARα functional activities are tested in the chimeric GAL4/PPARα assay format. The data are reported as an EC_{50} value calculated using XLfit 4 parameter fit and floating all parameters. Full length human PPARα and PPARγ co-transfection assays in HepG2 cells are employed for further testing the leading compounds (BMS-687453)[1]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.
Animal Administration [1]	Male 6–8 week old human apoA1 transgenic mice are randomly assigned into different treatment groups and weighed and dosed by oral gavage (5 mL/kg body weight) once a day in the morning with vehicle alone or with compound (BMS-687453) and allowed free access to food and water. The study duration is 10 days. After dosing on day 10, mice are fasted for 4 h and sacrificed by CO_2 asphyxiation, and blood samples are collected in serum-separating tubes via cardiac puncture for lipid measurements. Livers are dissected out, weighed, and quickly frozen in liquid nitrogen for future RNA analysis. Human apoA1 concentration in serum is measured using the apolipoprotein A1 kit[1]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

CUSTOMER VALIDATION

- Cell Rep. 2023 Jan 31;42(1):111948.
- Radboud University Nijmegen. 2021 Mar.

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REFERENCES

[1]. Li J, et al. Discovery of an oxybenzylglycine based peroxisome proliferator activated receptor alpha selective agonist 2-((3-((2-(4-chlorophenyl)-5-methyloxazol-4-yl)methoxy)benzyl)(methoxycarbonyl)amino)acetic acid (BMS-687453). J Med Chem. 2010 Apr 8;53

[2]. Mukherjee R, et al. Novel peroxisome proliferator-activated receptor alpha agonists lower low-density lipoprotein and triglycerides, raise high-density lipoprotein, and synergistically increase cholesterol excretion with a liver X receptor agonist. J Phar

[3]. Vassallo JD, et al. Biomarkers of drug-induced skeletal muscle injury in the rat: troponin I and myoglobin. Toxicol Sci. 2009 Oct;111(2):402-12.

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