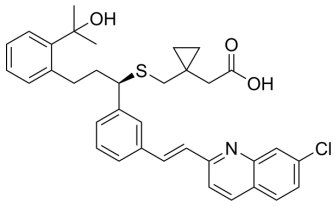
Montelukast

Cat. No.:	HY-13315A
CAS No.:	158966-92-8
Molecular Formula:	$C_{35}H_{36}ClNO_3S$
Molecular Weight:	586.18
Target:	Leukotriene Receptor
Pathway:	GPCR/G Protein
Storage:	Powder -20°C 3 years 4°C 2 years In solvent -80°C 6 months -20°C 1 month



SOLVENT & SOLUBILITY

In Vitro

DMSO : 250 mg/mL (426.49 mM; Need ultrasonic)

Preparing Stock Solutions	Mass / Solvent / Concentration	1 mg	5 mg	10 mg
	1 mM	1.7060 mL	8.5298 mL	17.0596 mL
	5 mM	0.3412 mL	1.7060 mL	3.4119 mL
	10 mM	0.1706 mL	0.8530 mL	1.7060 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: 2.08 mg/mL (3.55 mM); Suspended solution; Need ultrasonic

BIOLOGICAL ACTIVITY

Description

Montelukast (MK0476 free base) is a potent, selective and orally active antagonist of cysteinyl leukotriene receptor 1 ($CysLT_1$). Montelukast can be used for the reseach of asthma and liver injury. Montelukast also has an antioxidant effect in intestinal ischemia-reperfusion injury, and could reduce cardiac damage. Montelukast decreases eosinophil infiltration into the asthmatic airways. Montelukast can also be used for COVID-19 research[1][2][3][4].

IC_{50} & Target

$CysLT_1$

In Vitro

Montelukast (5 μM; 1 h) inhibits APAP (Acetaminophen) (HY-66005)-induced cell damage[1].
Montelukast (0.01-10 μM; 30 min) diminishes the 5-oxo-ETE–induced cell migration and modulates the activation of the plasmin-plasminogen system[3].
Montelukast (10 μM; 18 h) modulates the activation of MMP-9[3].
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Cell Migration Assay [3]

Cell Line:	Eosinophils
Concentration:	0.01-10 μM
Incubation Time:	30 min
Result:	Diminished the 5-oxo-ETE–induced cell migration.

Western Blot Analysis[3]

Cell Line:	Eosinophils
Concentration:	10 μM
Incubation Time:	18 h
Result:	Reduced the 5-oxo-ETE–boosted MMP-9 secretion.

In Vivo

Montelukast (3 mg/kg; oral gavage) protects against APAP-induced hepatotoxicity in mice[1].
Montelukast (1 mg/kg; miniosmotic pump administration) reduces the airway remodeling changes observed in OVA-treated mice and blocks the actions of cysteinyl leukotrienes (LT) C4, D4, and E4 mediated by the CysLT1 receptor[2].
Montelukast (1 mg/kg; miniosmotic pump administration) reduces the elevated levels of IL-4 and IL-13 found in the BAL fluid of OVA-treated mice[2].
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Animal Model:	C57BL/6J mice (8-week-old; 22-25 g) are induced acute hepatic injury[1]
Dosage:	3 mg/kg
Administration:	Oral gavage 1 h after saline or APAP administration
Result:	Decreased serum levels of alanine transaminase (ALT) and aspartate aminotransferase (AST), and alleviated liver damage.

CUSTOMER VALIDATION

- J Cachexia Sarcopenia Muscle. 2022 Jun 9.
- Artif Cell Nanomed B. 2019 Dec;47(1):4234-4239.
- Eur J Pharmacol. 2022 May 15;923:174892.
- Naunyn Schmiedebergs Arch Pharmacol. 2023 Feb 27.
- Patent. US20230404992A1.

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REFERENCES

[1]. Khan AR, et al. Montelukast in hospitalized patients diagnosed with COVID-19. J Asthma. 2022 Apr;59(4):780-786.

[2]. Pu S, et, al. Montelukast Prevents Mice Against Acetaminophen-Induced Liver Injury. Front Pharmacol. 2019 Sep 18; 10:1070.

[3]. William RHJ, et, al. A role for cysteinyl leukotrienes in airway remodeling in a mouse asthma model. Am J Respir Crit Care Med. 2002 Jan 1; 165(1): 108-16.

[4]. Langlois A, et al. Montelukast regulates eosinophil protease activity through a leukotriene-independent mechanism. J Allergy Clin Immunol. 2006;118(1):113-119.

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