Castanospermine

Cat. No.: HY-N2022

CAS No.: 79831-76-8

Molecular Formula: $C_8H_{15}NO_4$

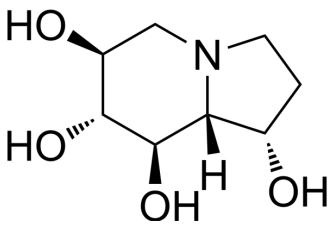
Molecular Weight: 189.21

Target: Glucosidase

Pathway: Metabolic Enzyme/Protease

Storage:

Powder	-20°C	3 years
	4°C	2 years
In solvent	-80°C	6 months
	-20°C	1 month



SOLVENT & SOLUBILITY

In Vitro

H_2O : 100 mg/mL (528.51 mM; Need ultrasonic)
DMSO : 100 mg/mL (528.51 mM; Need ultrasonic)

Preparing Stock Solutions	Solvent / Mass / Concentration	1 mg	5 mg	10 mg
	1 mM	5.2851 mL	26.4257 mL	52.8513 mL
	5 mM	1.0570 mL	5.2851 mL	10.5703 mL
	10 mM	0.5285 mL	2.6426 mL	5.2851 mL

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

In Vivo

1. Add each solvent one by one: PBS
   Solubility: 120 mg/mL (634.22 mM); Clear solution; Need ultrasonic
2. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: ≥ 2.5 mg/mL (13.21 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 2.5 mg/mL (13.21 mM); Clear solution
4. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.5 mg/mL (13.21 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Castanospermine is a natural alkaloid that can be extracted from black beans or the Moreton Bay chestnut tree (Castanospermum australae). Castanospermine is an α/ β-glucosidase inhibitor. Castanospermine has anti-inflammatory, antiviral replication and anti-metastatic effects on prostate cancer. Castanospermine can be used as an immunosuppressant to prevent transplant rejection[1][2][3][4].

In Vitro

Castanospermine (0.01-1000 μM, 48 h) inhibits the production of DEN infectious virus in a dose-dependent manner and slows the electrophoretic mobility of DEN prM (a glycosylated structural protein) in BGK-21 cells[1].

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

RT-PCR[1]

Cell Line:	BHK-21
Concentration:	100, 500 μM
Incubation Time:	48 h
Result:	Reduced marker gene expression or propagation of WNV or DEN replicons modestly by up to 20 to 40%, respectively. Had small effects on the secretion of infectious WNV or viral particles containing WNV RNA but decreased the amount of DEN viral RNA and infectious virus.

In Vivo

Castanospermine (10, 50, 250 mg/kg, i.p., a single dose for 10 consecutive days) can improve the survival rate of mice infected with DEN-2 virus[1].Castanospermine (10-500 mg/kg, intraperitoneal injection) can improve the symptoms of acute pancreatic injury in rats[2].

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Animal Model:	A/J mice model[1]
Dosage:	10, 50, 250 mg/kg
Administration:	i.p.
Result:	Decreased secretion and virus infectivity, and increased survival rate of mice infected with DEN virus.

Animal Model:	Acute pancreatitis (AP) rat model[2]
Dosage:	10, 50, 100, 200, 500 mg/kg
Administration:	i.p.
Result:	The extent and severity of the pancreatic injury were significantly decreased. Decreased the interleukin production in serum and NF-kB activation. Increased the level of TNF-a, ICAM-1 and VCAM-1.

CUSTOMER VALIDATION

- Glycobiology. 2020 Sep 26;cwaa091.
- Preprints. 2023 Dec 20.

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REFERENCES

[1]. Whitby K, et al. Castanospermine, a potent inhibitor of dengue virus infection in vitro and in vivo. J Virol. 2005 Jul;79(14):8698-706.

[2]. Hong YP, et al. Effects of Castanospermine on Inflammatory Response in a Rat Model of Experimental Severe Acute Pancreatitis. Arch Med Res. 2016 Aug;47(6):436-445.

[3]. Elbein AD. Glycosidase inhibitors: inhibitors of N-linked oligosaccharide processing. FASEB J. 1991 Dec;5(15):3055-63

[4]. den Dulk M, et al. Combined donor leucocyte administration and immunosuppressive drug treatment for survival of rat heart allografts. Transpl Immunol. 2004 Nov;13(3):177-84.

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