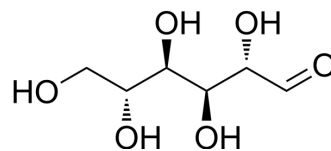


D-Mannose

Cat. No.:	HY-N0379
CAS No.:	3458-28-4
Molecular Formula:	C ₆ H ₁₂ O ₆
Molecular Weight:	180.16
Target:	Endogenous Metabolite
Pathway:	Metabolic Enzyme/Protease
Storage:	4°C, stored under nitrogen * In solvent : -80°C, 6 months; -20°C, 1 month (stored under nitrogen)



SOLVENT & SOLUBILITY

In Vitro

H₂O : ≥ 50 mg/mL (277.53 mM)
 DMSO : 50 mg/mL (277.53 mM; Need ultrasonic)
 * "≥" means soluble, but saturation unknown.

Preparing Stock Solutions	Solvent Concentration	Mass		
		1 mg	5 mg	10 mg
	1 mM	5.5506 mL	27.7531 mL	55.5062 mL
	5 mM	1.1101 mL	5.5506 mL	11.1012 mL
	10 mM	0.5551 mL	2.7753 mL	5.5506 mL

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

In Vivo

- Add each solvent one by one: PBS
Solubility: 150 mg/mL (832.59 mM); Clear solution; Need ultrasonic
- Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
Solubility: ≥ 2.5 mg/mL (13.88 mM); Clear solution
- Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
Solubility: ≥ 2.5 mg/mL (13.88 mM); Clear solution
- Add each solvent one by one: 10% DMSO >> 90% corn oil
Solubility: ≥ 2.5 mg/mL (13.88 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

D-Mannose is a C-2 superpolymer of glucose that occurs naturally in many plants and fruits. D-Mannose has anti-inflammatory and antitumor activity. D-Mannose plays an important role in immune regulation^{[1][2][3]}.

IC₅₀ & Target

Human Endogenous Metabolite

In Vitro	<p>D-Mannose (5.5, 11, 25 mM, 24 h) inhibits macrophage activation by inhibiting the production of IL-1β^[1]. D-Mannose (25 mM, 24-72 h) stimulates Treg cell differentiation in human and mouse cells by promoting TGF-β activation and inhibiting immunopathology^[2]. MCE has not independently confirmed the accuracy of these methods. They are for reference only. RT-PCR^[1]</p>	
	Cell Line:	BMDMs
	Concentration:	5.5, 11, 25 mM
	Incubation Time:	24 h
	Result:	Decreased LPS-induced Il1b gene expression dose-dependently
In Vivo	<p>D-Mannose (2g/kg, intraperitoneally injected 6 times per hour, killed 3 h later) can protect mice from DSS-induced ulcerative colitis ^[1]. D-Mannose (1.1 M D-mannose dissolved in water for 2 months) alleviates bone loss in mice through Treg cell proliferation and intestinal microbiome-dependent anti-inflammatory effects^[3]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.</p>	
	Animal Model:	C57BL/6 mice ^[1]
	Dosage:	20% (w/v)
	Administration:	i.g. pre-treated for 2 weeks
	Result:	Opposed loss of body weight induced by DSS and delayed colitis progression.

REFERENCES

[1]. Torretta S, et al. D-mannose suppresses macrophage IL-1 β production. Nat Commun. 2020 Dec 11;11(1):6343.

[2]. Zhang D, et al. D-mannose induces regulatory T cells and suppresses immunopathology. Nat Med. 2017 Sep;23(9):1036-1045.

[3]. Liu H, et al. D-mannose attenuates bone loss in mice via Treg cell proliferation and gut microbiota-dependent anti-inflammatory effects. Ther Adv Chronic Dis. 2020 Apr 17;11:2040622320912661.

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

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