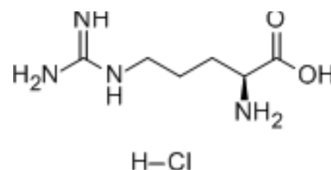


L-Arginine hydrochloride

Cat. No.:	HY-N0455A
CAS No.:	1119-34-2
Molecular Formula:	C ₆ H ₁₅ ClN ₄ O ₂
Molecular Weight:	211
Target:	NO Synthase; Endogenous Metabolite
Pathway:	Immunology/Inflammation; Metabolic Enzyme/Protease
Storage:	4°C, sealed storage, away from moisture
	* In solvent : -80°C, 6 months; -20°C, 1 month (sealed storage, away from moisture)



SOLVENT & SOLUBILITY

In Vitro	H ₂ O : 100 mg/mL (473.93 mM; Need ultrasonic)			
	DMSO : < 1 mg/mL (ultrasonic;warming;heat to 80°C) (insoluble or slightly soluble)			
	Preparing Stock Solutions	Mass	1 mg	5 mg
		Solvent	10 mg	
		Concentration		
		1 mM	4.7393 mL	23.6967 mL
In Vivo	5 mM	0.9479 mL	4.7393 mL	9.4787 mL
		10 mM	0.4739 mL	2.3697 mL
				4.7393 mL
	Please refer to the solubility information to select the appropriate solvent.			
In Vivo	1. Add each solvent one by one: PBS			
	Solubility: 100 mg/mL (473.93 mM); Clear solution; Need ultrasonic			

BIOLOGICAL ACTIVITY

Description	L-Arginine ((S)-(+)-Arginine) is the substrate for the endothelial nitric oxide synthase (eNOS) to generate NO. L-Arginine is transported into vascular smooth muscle cells by the cationic amino acid transporter family of proteins where it is metabolized to nitric oxide (NO), polyamines, or L-proline. L-Arginine is a potent vasodilator, and can be used to induce experimental acute pancreatitis ^{[1][2][3][4][5]} .	
IC ₅₀ & Target	Microbial Metabolite	Human Endogenous Metabolite
In Vitro	Arginine is an α-amino acid. The L-form is one of the 20 most common natural amino acids. At the level of molecular genetics, in the structure of the messenger ribonucleic acid mRNA, CGU, CGC, CGA, CGG, AGA, and AGG, are the triplets of nucleotide bases or codons that code for arginine during protein synthesis. In mammals, arginine is classified as a semiessential or conditionally essential amino acid, depending on the developmental stage and health status of the individual. L-Arginine is associated with a decrease in cardiac index while stroke index is maintained in patients with severe sepsis. Resolution of shock at 72 hours is achieved by 40% and 24% of the patients in the L-Arginine and placebo cohorts,	

respectively. L-Arginine (450 mg/kg during a 15-minute period) amplifies and sustains the hyperemia (38%) and increases absolute brain blood flow after eNOS upregulation by chronic simvastatin treatment (2 mg/kg subcutaneously, daily for 14 days) in SV-129 mice.

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

In Vivo

L-Arginine has been widely accepted as a method of induce experimental acute pancreatitis^{[4][5]}.

Dose reference for L-Arginine induction^{[4][5]}:

(1) Model animal: Male Wistar albino rats

Acute pancreatitis: single i.p. injection of 500 mg of L-arginine/100 g body weight

(2) Model animal: Male ICR mice

Acute pancreatitis: i.p. with 2.25g/kg body weight of L-Arginine hourly for 2 hours

Dissolution method of L-Arginine^[5]:

L-arginine solution was prepared by dissolving L-arginine powder in 0.9% normal saline and adjusting the pH to 7 with 5 N HCl.

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

CUSTOMER VALIDATION

- Nat Protoc. 2021 Jan;16(1):431-457.
- Nutrients. 2023 Oct 18, 15(20), 4427.
- Viruses. 2021 Jun 26;13(7):1236.
- Dig Dis Sci. 2022 Jul 4.
- Pancreas. 2020 Jan;49(1):111-119.

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REFERENCES

- [1]. Bakker J, et al. Administration of the nitric oxide synthase inhibitor NG-methyl-L-arginine hydrochloride (546C88) by intravenous infusion for up to 72 hours can promote the resolution of shock in patients with severe sepsis: results of a randomized, double-blind, placebo-controlled multicenter study (study no. 144-002). Crit Care Med. 2004 Jan;32(1):1-12.
- [2]. Tapiero H, et al. L-Arginine. Biomed Pharmacother. 2002 Nov;56(9):439-45.
- [3]. Yamada M, et al. Endothelial nitric oxide synthase-dependent cerebral blood flow augmentation by L-arginine after chronic statin treatment. J Cereb Blood Flow Metab. 2000 Apr;20(4):709-17.
- [4]. Mizunuma T, et al. Effects of injecting excess arginine on rat pancreas. J Nutr. 1984 Mar;114(3):467-71.
- [5]. Siriviriyakul P, et al. Effects of curcumin on oxidative stress, inflammation and apoptosis in L-arginine induced acute pancreatitis in mice. Heliyon. 2019 Aug 27;5(8):e02222.

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

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