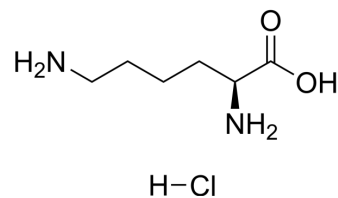


## L-Lysine hydrochloride

Cat. No.:	HY-N0470
CAS No.:	657-27-2
Molecular Formula:	C <sub>6</sub> H <sub>15</sub> ClN <sub>2</sub> O <sub>2</sub>
Molecular Weight:	182.65
Target:	Virus Protease; Endogenous Metabolite
Pathway:	Anti-infection; 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 <sub>2</sub> O : 100 mg/mL (547.50 mM; Need ultrasonic)					
	DMSO : < 1 mg/mL (insoluble or slightly soluble)					
	Preparing Stock Solutions	Solvent Concentration	Mass	1 mg	5 mg	10 mg
		1 mM		5.4750 mL	27.3748 mL	54.7495 mL
		5 mM		1.0950 mL	5.4750 mL	10.9499 mL
10 mM			0.5475 mL	2.7375 mL	5.4750 mL	
Please refer to the solubility information to select the appropriate solvent.						
In Vivo	1. Add each solvent one by one: PBS Solubility: 50 mg/mL (273.75 mM); Clear solution; Need ultrasonic					

### BIOLOGICAL ACTIVITY

Description	L-lysine hydrochloride is an essential amino acid for humans with various benefits including treating herpes, increasing calcium absorption, reducing diabetes-related illnesses and improving gut health.	
IC <sub>50</sub> & Target	Microbial Metabolite	Human Endogenous Metabolite
In Vivo	L-lysine treatment attenuates pancreatic tissue injury induced by L-arginine by inhibiting the release of the inflammatory cytokine IL-6 and enhances antioxidant activity. Pre- or post-treatment with L-lysine leads to significant decreases in the levels of malondialdehyde and nitric oxide, while significant enhancement is observed in the activities of antioxidant enzymes (superoxide dismutase, catalase, and glutathione peroxidase) and glutathione <sup>[1]</sup> . L-lysine supplementation almost completely ameliorates vascular calcification. Dietary L-lysine strongly suppresses plasma intact parathyroid hormone in adenine rats and supports a proper bone-vascular axis. The conserved orientation of the femoral apatite in group Lys also evidences the bone-protective effects of L-lysine. Dietary L-lysine elevates plasma alanine, proline, arginine, and	

homoarginine but not lysine<sup>[2]</sup>. The dose-dependent delay in gastric emptying observed in rats is confirmed in humans with an increase in halftime of gastric emptying of 4 min/g L-lysine. Moreover, a dose-dependent increase in intestinal fluid accumulation is observed (0.4 mL/min/g L-lysine)<sup>[3]</sup>.

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

## PROTOCOL

### Animal Administration <sup>[1][2]</sup>

Rats: Nephrocalcinosis in 6-week-old male Wistar rats is induced by continuous injection of rat PTH 1-34 at a dosage of 40 µg/kg per day via an osmotic mini-pump for 50 hours. L-lysine HCl or glycine at a dose of 20 mmol/kg is administered via a gastric tube at 2 hours, 14 hours, 26 hours, and 38 hours after the implantation of the osmotic pump. At the indicated periods, Serum and urinary biochemical parameters, urea nitrogen, albumin, calcium, inorganic phosphate, and magnesium are determined by clinical diagnostic reagents<sup>[2]</sup>.

Mice: Four groups of mice (10 in each group) are assessed. Group I is the control. Animals in groups II-IV are injected intraperitoneally with L-arginine hydrochloride (400 mg/kg body weight [bw]) for 3 days. Group III animals are orally pre-treated with L-lysine(10 mg/kg bw), whereas group IV animals are orally post-treated with L-lysine(10 mg/kg bw). Serum samples are subjected to amylase, lipase, transaminase, and interleukin-6 (IL-6) assays. The pancreas is excised to measure the levels of malondialdehyde, nitric oxide, catalase, superoxide dismutase, reduced glutathione, and glutathione peroxidase<sup>[1]</sup>.

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

## CUSTOMER VALIDATION

- Microbiome. 2019 Mar 20;7(1):43.
- J Anim Physiol Anim Nutr. 2022 Aug 3.
- Laurea Magistrale in Biomedical Engineering, Politecnico di Milano. 2019 Jun.

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## REFERENCES

[1]. Al-Malki AL, et al. Suppression of acute pancreatitis by L-lysine in mice. BMC Complement Altern Med. 2015 Jun 23;15:193.

[2]. Baruffol C, et al. L-lysine dose dependently delays gastric emptying and increases intestinal fluid volume in humans and rats. Neurogastroenterol Motil. 2014 Jul;26(7):999-1009.

[3]. Shimomura A, et al. Dietary L-lysine prevents arterial calcification in adenine-induced uremic rats. J Am Soc Nephrol. 2014 Sep;25(9):1954-65.

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

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