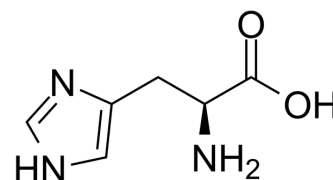


## L-Histidine

Cat. No.:	HY-N0832
CAS No.:	71-00-1
Molecular Formula:	C <sub>6</sub> H <sub>9</sub> N <sub>3</sub> O <sub>2</sub>
Molecular Weight:	155.15
Target:	Mitochondrial Metabolism; Endogenous Metabolite
Pathway:	Metabolic Enzyme/Protease
Storage:	<div> Powder -20°C 3 years </div> <div> 4°C 2 years </div> <div> In solvent -80°C 1 year </div> <div> -20°C 6 months </div>



### SOLVENT & SOLUBILITY

In Vitro	H <sub>2</sub> O : 20.83 mg/mL (134.26 mM; ultrasonic and warming and heat to 80°C)					
	DMSO : < 1 mg/mL (insoluble or slightly soluble)					
	Preparing Stock Solutions	<div>Solvent Concentration</div>	Mass	1 mg	5 mg	10 mg
		1 mM		6.4454 mL	32.2269 mL	64.4538 mL
		5 mM		1.2891 mL	6.4454 mL	12.8908 mL
10 mM		0.6445 mL	3.2227 mL	6.4454 mL		
Please refer to the solubility information to select the appropriate solvent.						
In Vivo	1. Add each solvent one by one: PBS					
	Solubility: 25 mg/mL (161.13 mM); Clear solution; Need ultrasonic					

### BIOLOGICAL ACTIVITY

Description	L-Histidine is an essential amino acid for infants. L-Histidine is an inhibitor of mitochondrial glutamine transport.	
IC <sub>50</sub> & Target	Microbial Metabolite	Human Endogenous Metabolite
In Vitro	L-histidine completely inhibits growth and its effect on viability is inversely related to FLO11 expression. L-histidine does not affect the viability of the Δflo11 and S288c strains. L-histidine dramatically decreases air-liquid biofilm formation and adhesion to polystyrene of the flor yeasts with no effect on the transcription level of the FLO11 gene. Moreover, L-histidine modifies the chitin and glycans content on the cell-wall of flor yeasts <sup>[1]</sup> . MCE has not independently confirmed the accuracy of these methods. They are for reference only.	
In Vivo	L-histidine (100 mg/kg) completely inhibits the brain edema in thioacetamide-treated rats <sup>[2]</sup> . Histamine release stimulated	

by high K<sup>+</sup> from the hypothalamus in the L-histidine diet group is 60% of that in the control group. However, the concentrations of other monoamines and their metabolites are not changed by the L-histidine diet. The open-field tests show that the L-histidine diet group spends a shorter amount of time in the central zone, and the light/dark box tests demonstrate that the L-histidine diet group spends a shorter amount of time in the light box, suggesting that the L-histidine diet induced anxiety-like behaviors<sup>[3]</sup>.

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## PROTOCOL

### Animal Administration <sup>[2]</sup><sup>[3]</sup>

**Rats:** TAA (300 mg/kg i.p) is given to animals daily for 3 days. L-histidine (100 mg/kg) is dissolved in saline and injected (i.p.) daily 2 hours before each TAA injection. To prevent hypoglycemia and dehydration, rats are given 12.5 ml/kg of fluid therapy (5% dextrose and 0.45% saline with 20 mEq/L of potassium chloride) every 12 hours, s.c. Normal controls receive saline (vehicle used for TAA), whereas another group of rats are given L-histidine alone (100 mg/kg) daily for 3 days. TAA-treated rats are clinically monitored, and stages of encephalopathy are graded<sup>[2]</sup>.

**Mice:** The control group is fed with the AIN-93G purified diet that contains 5.08 g L-histidine/kg, whereas the L-histidine diet group is fed with AIN-93G that contains 1.28 g L-histidine/kg (25% of the histidine content in AIN-93G). To equalize the total amount of amino acids, glutamine is added to the L-histidine diet to counterbalance the changes in the histidine content (18.32 g L-glutamine/kg AIN-93G vs. 23.72 g L-glutamine/kg L-histidine diet). Both diets are isonitrogenous. At 8 wk of age, the mice are weighed and assigned to 2 different diets. The mice are allowed ad libitum access to water and their respective diets, and they are housed for at least 2 wk in the laboratory before starting the experiments<sup>[3]</sup>.

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

## REFERENCES

- [1]. Bou Zeidan M, et al. L-histidine inhibits biofilm formation and FLO11-associated phenotypes in *Saccharomyces cerevisiae* flor yeasts. *PLoS One*. 2014 Nov 4;9(11):e112141.
- [2]. Rama Rao KV, et al. Brain edema in acute liver failure: inhibition by L-histidine. *Am J Pathol*. 2010 Mar;176(3):1400-8.
- [3]. Yoshikawa T, et al. Insufficient intake of L-histidine reduces brain histamine and causes anxiety-like behaviors in male mice. *J Nutr*. 2014 Oct;144(10):1637-41.

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

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