L-Tyrosine

Cat. No.: HY-N0473

CAS No.: 60-18-4

Molecular Formula: $C_9H_{11}NO_3$

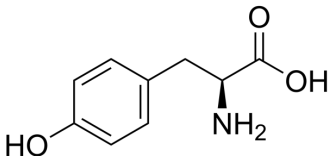
Molecular Weight: 181.19

Target: Endogenous Metabolite

Pathway: Metabolic Enzyme/Protease

Storage:

Powder	-20°C	3 years
	4°C	2 years
In solvent	-80°C	2 years
	-20°C	1 year



SOLVENT & SOLUBILITY

In Vitro

1M HCl : 50 mg/mL (275.95 mM; Need ultrasonic)
0.1 M HCL : 25 mg/mL (137.98 mM; Need ultrasonic)
DMSO : < 1 mg/mL (insoluble or slightly soluble)

Preparing Stock Solutions

Solvent / Mass / Concentration	1 mg	5 mg	10 mg
1 mM	5.5191 mL	27.5953 mL	55.1907 mL
5 mM	1.1038 mL	5.5191 mL	11.0381 mL
10 mM	0.5519 mL	2.7595 mL	5.5191 mL

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

In Vivo

1. Add each solvent one by one: 0.5% CMC-Na/saline water
   Solubility: 40 mg/mL (220.76 mM); Suspended solution; Need ultrasonic
2. Add each solvent one by one: 50% PEG300 >> 50% saline
   Solubility: 40 mg/mL (220.76 mM); Suspended solution; Need ultrasonic and warming and heat to 60°C

BIOLOGICAL ACTIVITY

Description

L-Tyrosine is a non-essential amino acid which can inhibit citrate synthase activity in the posterior cortex.

IC_{50} & Target

Microbial Metabolite | Human Endogenous Metabolite

In Vitro

L-Tyrosine inhibits citrate synthase activity in the posterior cortex (2.0 and 4.0 mM), malate dehydrogenase is not altered by L-Tyrosine and succinate dehydrogenase is increased in the posterior cortex (0.1-4.0 mM), hippocampus (1.0-4.0 mM), striatum (4.0 mM) and liver (0.1-4.0 mM). When complex I activity is analyzed, inhibition is observed in hippocampus (4.0 mM). In addition to inhibition in the hippocampus, complex II also is inhibited in the posterior cortex (0.1-4.0 mM) and liver

	(1.0, 2.0 and 4.0 mM). For complex II–III, activity is not altered by L-Tyrosine, and complex IV activity has decreased in the posterior cortex (1.0-4.0 mM) following treatment with L-Tyrosine[1]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.
In Vivo	The acute administration of L-Tyrosine inhibits the activity of citrate synthase in the posterior cortex and liver; however, in the striatum, the activity is increased. The results also demonstrate that acute administration of L-Tyrosine inhibits malate dehydrogenase and complex II, II–III and IV of the mitochondrial respiratory chain activity in the posterior cortex and liver of rats. The succinate dehydrogenase enzyme and complex I activity are inhibited in the posterior cortex and increased in the striatum. Furthermore, energy metabolism in the hippocampus is not amended by an acute administration of L-Tyrosine[1]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

PROTOCOL

Kinase Assay [1]	Posterior cortex, hippocampus, striatum and liver supernatants of 30-day-old rats are pre-incubated for 30 min at 30°C in the presence of L-Tyrosine (Tyr) at final concentrations ranging from 0.1, 1.0, 2.0 or 4.0 mM, and the activities of citrate synthase, malate dehydrogenase and respiratory chain complexes I, II, II–III and IV are evaluated[1]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.
Animal Administration [1]	The equivalent of 500 mg/kg body weight of free L-Tyrosine is intraperitoneally administered in 30-day-old rats. Controls receive in saline solution. About 1 h after injections, rats are killed by decapitation without anesthesia[1]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

CUSTOMER VALIDATION

- Microbiome. 2019 Mar 20;7(1):43.

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REFERENCES

[1]. Ferreira GK, et al. Effect of L-tyrosine in vitro and in vivo on energy metabolism parameters in brain and liver of young rats. Neurotox Res. 2013 May;23(4):327-35.

Tel: 609-228-6898 Fax: 609-228-5909 E-mail: tech@MedChemExpress.com
Address: 1 Deer Park Dr, Suite Q, Monmouth Junction, NJ 08852, USA