L-Methionine

Cat. No.: HY-N0326

CAS No.: 63-68-3

Molecular Formula: $C_5H_{11}NO_2S$

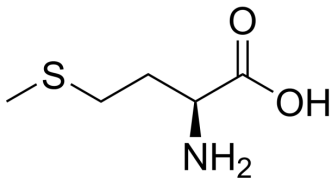
Molecular Weight: 149.21

Target: Endogenous Metabolite; Keap1-Nrf2; Apoptosis

Pathway: Metabolic Enzyme/Protease; NF-κB; Apoptosis

Storage:

Powder	-20°C	3 years
	4°C	2 years
In solvent	-80°C	6 months
	-20°C	1 month



SOLVENT & SOLUBILITY

In Vitro

H_2O : 10 mg/mL (67.02 mM; Need ultrasonic)

Preparing Stock Solutions	Solvent / Mass / Concentration	1 mg	5 mg	10 mg
	1 mM	6.7020 mL	33.5098 mL	67.0196 mL
	5 mM	1.3404 mL	6.7020 mL	13.4039 mL
	10 mM	0.6702 mL	3.3510 mL	6.7020 mL

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

In Vivo

1. Add each solvent one by one: PBS
   Solubility: 12.5 mg/mL (83.77 mM); Clear solution; Need ultrasonic and warming and heat to 60°C

BIOLOGICAL ACTIVITY

Description

L-Methionine is an L-isomer of orally active Methionine, an essential amino acid. Methionine is a strong liver antidote that acts as a liver protector. L-Methionine can inhibit cell proliferation and induce cell apoptosis. L-Methionine has antitumor and antioxidant activity[1][2][3].

IC_{50} & Target	Microbial Metabolite	Human Endogenous Metabolite

In Vitro

L-Methionine (5 mg/mL, 7 or 3 days) can inhibit the proliferation of BXPC-3 (mutant p53) and HPAC (wild-type p53) pancreatic cancer cells, interfere with cell cycle, and induce apoptosis of BXPC-3 cells[1].

L-Methionine (0.3-10 mM, 24 h) reduces the formation of free radicals in endothelial cells by inducing heme oxidase-1 and ferritin[2].

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

Cell Proliferation Assay[1]

Cell Line:	BXPC-3, HPAC
Concentration:	5 mg/mL
Incubation Time:	7 or 3 days
Result:	Reduced growth of BXPC-3 cells by 31 and 32%, respectively. Reduced growth of HPAC cells by 35% and 18%, respectively. Reduced S to G2 transition in BXPC-3 cells and intervened in both G1–S and S–G2 transitions in HPAC cells. Increased late cell apoptosis at a percentage of 76% in BXPC-3 cells.

Western Blot Analysis[2]

Cell Line:	ECV304
Concentration:	0.3, 1, 3, 5, 10 mM
Incubation Time:	24 h
Result:	Increased the level of HO-1 protein up to 9.5-fold and the HO-1 activity.

In Vivo

L-Methionine (215, 268.8, 322.5, 430 mg/kg, orally, for 14 consecutive days) induces endogenous antioxidant activity by activating the Nrf2-ARE pathway and inhibits ROS-induced oxidative stress in growing rats[3].

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

Animal Model:	Male Wistar rats (body weight 70-80 g)[3]
Dosage:	215,268.8, 322.5, 430 mg/kg
Administration:	p.o.
Result:	Reduced the hepatic ROS levels and the hepatic MDA contents. Increased the hepatic T-AOC, CAT and T-SOD. Increased the hepatic activity of GCL, GR, GST and GPx.

REFERENCES

[1]. Benavides MA, et al. L-Methionine inhibits growth of human pancreatic cancer cells. Anticancer Drugs. 2014 Feb;25(2):200-3.

[2]. Erdmann K, et al. L-methionine reduces oxidant stress in endothelial cells: role of heme oxygenase-1, ferritin, and nitric oxide. AAPS J. 2005 Aug 29;7(1):E195-200.

[3]. Wang Z, et al. l-Methionine activates Nrf2-ARE pathway to induce endogenous antioxidant activity for depressing ROS-derived oxidative stress in growing rats. J Sci Food Agric. 2019 Aug 15;99(10):4849-4862.

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