L-Canavanine sulfate

Cat. No.: HY-B1581A

CAS No.: 2219-31-0

Molecular Formula: $C_5H_{14}N_4O_7S$

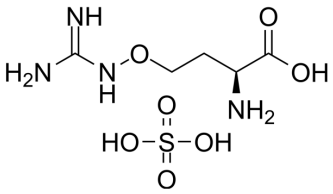
Molecular Weight: 274.25

Target: NO Synthase

Pathway: Immunology/Inflammation

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_2O : 100 mg/mL (364.63 mM; Need ultrasonic and warming)

Preparing Stock Solutions	Solvent / Mass / Concentration	1 mg	5 mg	10 mg
	1 mM	3.6463 mL	18.2315 mL	36.4631 mL
	5 mM	0.7293 mL	3.6463 mL	7.2926 mL
	10 mM	0.3646 mL	1.8232 mL	3.6463 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 (182.32 mM); Clear solution; Need ultrasonic

BIOLOGICAL ACTIVITY

Description

L-Canavanine sulfate is a selective inhibitor of inducible NO synthase.

IC_{50} & Target

NO synthase[1]

In Vitro

L-Canavanine sulfate (L-CAV) causes only a limited degree of cytotoxicity in HeLa, Hep G2, and SK-HEP-1 cells when given alone in arginine-rich media with IC_{50} values ranging from 5 to 10 mM. In HaCaT keratinocyte cell line, IC_{50} of L-Canavanine sulfate exceeds the concentration of 10 mM, indicating low cytotoxicity in normal cells in vitro. In arginine-free media, IC_{50} of L-Canavanine sulfate in HeLa, Hep G2, and SK-HEP-1 cells are 0.21±0.04; 0.64±0.16; and 1.18±0.14 mM, respectively. L-Canavanine sulfate, which is hardly toxic alone, potentiates the cytotoxicity of vinblastine (VIN) and paclitaxel (PTX) in HeLa and hepatocellular carcinoma cells[2].

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

In Vivo

Administration of L-Canavanine sulfate (100 mg/kg) produces a moderate increase in mean arterial pressure of 20 mm Hg, returns blood pressure to near basal levels and completely attenuates the lipopolysaccharide-induced hypotension. All, but

	one, endotoxaemic rats dosed with L-Canavanine sulfate (100 mg/kg) survive for 6 h post lipopolysaccharide, after which time the experiment is terminated (n=7)[1]. L-canavanine inhibits DNA synthesis by Li 210 cells in vivo and significantly increases the lifespan of animals bearing the Li 210 leukemia. An optimal dose of 18 g/kg produces a peak increase in lifespan of 44%. The therapeutic dose range is narrow, and a dose of 24 g/kg causes death due to drug toxicity[3]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

PROTOCOL

Cell Assay [2]	A dose-dependent cytotoxicity is examined using the MTT assay. Into each well of 96-well plates, 2×10^4 of cells are seeded, and after 24 h incubation, cells are incubated with test compounds (including L-Canavanine sulfate). After 24 h, 0.5 mg/mL of MTT is added to each well of HeLa, Caco-2, MIA PaCa-2, BxPC-3 and SK-HEP-1 cells, while MTT is added to Hep G2 after 48 h incubation with test compounds (including L-Canavanine sulfate). The cells are then incubated for 3 h so that the viable cells could produce formazan crystals; they are then dissolved in 100 µL DMSO. After incubation for 10 min in a shaker, the absorption of the formazan is measured at 570 nm using a reader[2]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.
Animal Administration [1]	Male rats weighing 295 to 305 g are used. After a period of stabilization, 6 mg lipopolysaccharide/kg is administered intravenously in 0.3 mL over 2 min, and cardiovascular parameters are monitored over 5 to 6 h. L-Canavanine sulfate is administered intravenously in a 0.2 mL volume bolus injection at 100 mg/kg[1]. Mice: L-Canavanine is dissolved in phosphate-buffered saline[1]. L-Canavanine (100 mg/mb) is infused at a rate of 0.1 mL/hr through a catheter implanted S.C. over the back. Groups of 5 mice are treated at each dose beveltogether with 6 to 8 control animals and are inspected twice per day for median time of death[1]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

CUSTOMER VALIDATION

- Oncol Rep. 2018 Jun;39(6):2595-2603.

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REFERENCES

[1]. Teale DM, et al. L-canavanine restores blood pressure in a rat model of endotoxic shock. Eur J Pharmacol. 1994 Dec 12;271(1):87-92.

[2]. Nurcahyanti AD, et al. Cytotoxic potentiation of vinblastine and paclitaxel by L-canavanine in human cervical cancer and hepatocellular carcinoma cells. Phytomedicine. 2015 Dec 15;22(14):1232-7.

[3]. Green MH, et al. Antitumor activity of L-canavanine against L1210 murine leukemia. Cancer Res. 1980 Mar;40(3):535-7.

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