Cystamine (dihydrochloride)

Cat. No.: HY-W020050

CAS No.: 56-17-7

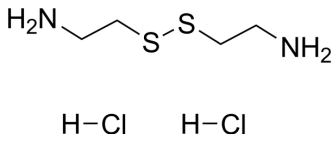
Molecular Formula: $C_4H_{14}Cl_2N_2S_2$

Molecular Weight: 225.2

Target: Caspase; Glutaminase; Apoptosis

Pathway: Apoptosis; 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

DMSO : 100 mg/mL (444.05 mM; Need ultrasonic)
H_2O : 100 mg/mL (444.05 mM; Need ultrasonic)

Preparing Stock Solutions

Concentration \ Solvent \ Mass	1 mg	5 mg	10 mg
1 mM	4.4405 mL	22.2025 mL	44.4050 mL
5 mM	0.8881 mL	4.4405 mL	8.8810 mL
10 mM	0.4440 mL	2.2202 mL	4.4405 mL

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

In Vivo

1. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: ≥ 2.5 mg/mL (11.10 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 2.5 mg/mL (11.10 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.5 mg/mL (11.10 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Cystamine (dihydrochloride) is the disulfide form of the free thiol, cysteamine. Cystamine is an orally active transglutaminase (Tgase) inhibitor. Cystamine also has inhibition activity for caspase-3 with an IC_{50} value of 23.6 μM. Cystamine can be used for the research of severals diseases including Huntington's disease (HD) [1][2][3].

IC_{50} & Target

Caspase 3
23.6 μM (IC_{50})

In Vitro

Cystamine (dihydrochloride) has inhibition activity for caspase-3 with an IC_{50} value of 23.6 μM[1].

Cystamine (0-500 μM; 0-16 h) inhibits recombinant active caspase-3 in a concentration-dependent manner[1].
Cystamine (250 μM; 10 h) robustly increases the levels of glutathione[1].
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Western Blot Analysis[1]

Cell Line:	Human neuroblastoma SH-SY5Y cells
Concentration:	250, 500 μM
Incubation Time:	0-16 h
Result:	Inhibited the MG132-mediated activation of caspase-3. Inhibited the H2O2-mediated activation of caspase-3. Inhibited caspase-3 activity in a tTG-independent manner.

In Vivo

Cystamine (dihydrochloride) (oral, i.p.; 112, 225 mg/kg) reduces Tgase activity and GGEL levels, lessens the behavioral and neuropathological severity, and extends survival in R6/2 transgenic HD mice[2].
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Animal Model:	R6/2 transgenic HD mice[2]
Dosage:	112, 225 mg/kg
Administration:	Intraperitoneal or oral, daily
Result:	Significantly extended survival, improved body weight and motor performance, delayed the neuropathological sequela and significantly altered the levels of Tgase activity and N(Sigma)-(gamma-L-glutamyl)-L-lysine (GGEL) levels.

REFERENCES

[1]. Mathieu Lesort, et al. Cystamine inhibits caspase activity. Implications for the treatment of polyglutamine disorders. J Biol Chem. 2003 Feb 7;278(6):3825-30.

[2]. Alpaslan Dedeoglu, et al. Therapeutic effects of cystamine in a murine model of Huntington's disease. J Neurosci. 2002 Oct 15;22(20):8942-50.

[3]. Thomas M Jeitner, et al. Cystamine and cysteamine as inhibitors of transglutaminase activity in vivo. Biosci Rep. 2018 Sep 5;38(5):BSR20180691.

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