Lipoamide

Cat. No.: HY-B1142

CAS No.: 940-69-2

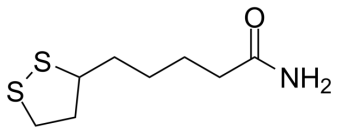
Molecular Formula: $C_8H_{15}NOS_2$

Molecular Weight: 205.34

Target: NO Synthase

Pathway: Immunology/Inflammation

Storage: Powder -20°C 3 years
4°C 2 years
* The compound is unstable in solutions, freshly prepared is recommended.



SOLVENT & SOLUBILITY

In Vitro

DMSO : ≥ 50 mg/mL (243.50 mM)
H_2O : 0.67 mg/mL (3.26 mM; Need ultrasonic)
* "≥" means soluble, but saturation unknown.

Preparing Stock Solutions

Solvent / Mass / Concentration	1 mg	5 mg	10 mg
1 mM	4.8700 mL	24.3499 mL	48.6997 mL
5 mM	0.9740 mL	4.8700 mL	9.7399 mL
10 mM	0.4870 mL	2.4350 mL	4.8700 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: ≥ 2.38 mg/mL (11.59 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 2.08 mg/mL (10.13 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.08 mg/mL (10.13 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Lipoamide ((±)-α-Lipoamide) is a monocarboxylic acid derivative of a neutral amide, formed by the condensation of the carboxyl group of lipoic acid and ammonia. Lipoamide protects against oxidative stress-mediated neuronal cell damage and also acts as a coenzyme to transfer acetyl groups and hydrogen during pyruvate deacylation. Lipoamide also stimulates mitochondrial biogenesis in adipocytes through the endothelial NO synthase-cGMP-protein kinase G signaling pathway[1][2].

IC_{50} & Target

Human Endogenous Metabolite

In Vitro

Lipoamide (10-100 μM; 24 h) can reduce H_2O_2 or 6-OHDA-induced PC12 cell damage and apoptosis, reduce LDH leakage and Caspase-3 activity[2].

Lipoamide (100 μM; 8 h) also upregulates the expression of Nrf2 in PC12 cells, promotes the nuclear translocation of Nrf2 and downstream gene expression, such as inducing the transcription of Nrf2-regulated antioxidant genes[2].

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

Cell Viability Assay[2]

Cell Line:	PC12 cells
Concentration:	10, 50, 100 μM
Incubation Time:	24 h; while cells were cultured with H_2O_2 or 6-OHDA for 5 h.
Result:	Effectively and dose-dependently rescued PC12 cells from cell injury caused by H_2O_2 or 6-OHDA. Significantly restored H_2O_2 or 6-OHDA-induced LDH leakage. Dose-dependently improved H_2O_2- or 6-OHDA-induced cell viability decrease.

Western Blot Analysis[2]

Cell Line:	PC12 cells
Concentration:	10, 50, 100 μM
Incubation Time:	2, 4, 8 h; while cells were cultured with H_2O_2 or 6-OHDA for 5 h.
Result:	Improved the expression of nuclear Nrf2 remarkably, and the peak occurred at 4 h.

CUSTOMER VALIDATION

- Cell. 2020 May 28;181(5):1062-1079.e30.
- Acta Pharmacol Sin. 2022 Nov 8.
- PLoS One. 2020 Sep 17;15(9):e0239340.
- Materials. 2021, 14(4), 963.
- University of Saskatchewan. 2020 Jun 22.

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REFERENCES

[1]. E S Arnér, et al. Efficient reduction of lipoamide and lipoic acid by mammalian thioredoxin reductase. Biochem Biophys Res Commun. 1996 Aug 5;225(1):268-74.

[2]. Hou Y, et al. Lipoamide Ameliorates Oxidative Stress via Induction of Nrf2/ARE Signaling Pathway in PC12 Cells. J Agric Food Chem. 2019 Jul 24;67(29):8227-8234.

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