Dihydrolipoic Acid

Cat. No.: HY-116807

CAS No.: 462-20-4

Molecular Formula: $C_8H_{16}O_2S_2$

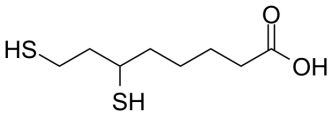
Molecular Weight: 208.34

Target: Reactive Oxygen Species

Pathway: Immunology/Inflammation; Metabolic Enzyme/Protease; NF-κB

Storage:

Pure form	-20°C	3 years
In solvent	-80°C	6 months
	-20°C	1 month



SOLVENT & SOLUBILITY

In Vitro

DMSO : 100 mg/mL (479.98 mM; Need ultrasonic)

Preparing Stock Solutions	Mass / Solvent / Concentration	1 mg	5 mg	10 mg
	1 mM	4.7998 mL	23.9992 mL	47.9985 mL
	5 mM	0.9600 mL	4.7998 mL	9.5997 mL
	10 mM	0.4800 mL	2.3999 mL	4.7998 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: ≥ 0.83 mg/mL (3.98 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 0.83 mg/mL (3.98 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 0.83 mg/mL (3.98 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Dihydrolipoic Acid (DHLA) is an excellent antioxidant capable of scavenging almost any oxygen-centered radical[1]. Dihydrolipoic acid exhibits anti-inflammatory properties in various diseases. Dihydrolipoic Acid exerts a preventive effect via ERK/Nrf2/HO-1/ROS/NLRP3 pathway in LPS-induced sickness behavior rats. Dihydrolipoic Acid can be used for the reaserch of depression[2].

In Vitro

Dihydrolipoic Acid is an antioxidant. DHLA is capable of scavenging •OH radicals and scavenging superoxide radical anions with a rate constant of 3.3×10^5 M^{-1} s^{-1}. Dihydrolipoic Acid is an excellent antioxidant, and that is very important because $O_2^{\bullet-}$ is a relatively mild oxidant that is therefore much more selective and can be useful to discriminate between the antioxidant

	capacities of different substrates[1]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.
In Vivo	Dihydrolipoic Acid (DHLA) treatment exerts preventive effects in LPS-induced sickness behavior rats. Dihydrolipoic Acid increases the expression of ERK, Nrf2, and HO-1 but decreases the ROS generation levels and reduces the expression of NLRP3, caspase-1, and IL-1β in LPS-induced sickness behavior rats. Dihydrolipoic Acid is a reduced form of α-lipoic acid (LA) that can decrease oxidative stress and act as a strong antioxidant[2]. Dihydrolipoic Acid treatment reverses the LPS-induced sickness behavior[2]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Animal Model:	Adult male Sprague-Dawley (SD) rats (weight, 200-220 g)[2]
Dosage:	15 mg/kg, 30 mg/kg, 60 mg/kg
Administration:	Injected intraperitoneally daily
Result:	Treatment with 30 mg/kg and 60 mg/kg improved the body weight gain as compared to the LPS group.

REFERENCES

[1]. Romina Castañeda-Arriaga, et al. Lipoic acid and dihydrolipoic acid. A comprehensive theoretical study of their antioxidant activity supported by available experimental kinetic data. J Chem Inf Model. 2014 Jun 23;54(6):1642-52.

[2]. Hetao Bian, et al. Dihydrolipoic acid protects against lipopolysaccharide-induced behavioral deficits and neuroinflammation via regulation of Nrf2/HO-1/NLRP3 signaling in rat. J Neuroinflammation. 2020 May 25;17(1):166.

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