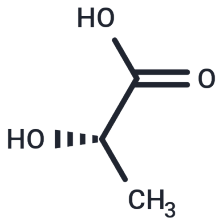
Data Sheet (Cat.No.T4845)

TargetMol

L-Lactic acid

Chemical Properties



CAS No. :	79-33-4
Formula:	C3H6O3
Molecular Weight:	90.08
Appearance:	no data available
Storage:	store at low temperature Powder: -20°C for 3 years | In solvent: -80°C for 1 year

Biological Description

Description	L-Lactic acid ((S)-2-Hydroxypropanoic acid) is a natural product produced by the anaerobic glycolysis of pyruvic acid. L-Lactic acid is a sensitive indicator of tissue hypoxia and can be used as a hemodynamic indicator in critically ill patients.
Targets(IC50)	Endogenous Metabolite,Antibacterial,Antibiotic
In vitro	**METHODS**: Mouse CD4+CD25-T cells were treated with low-glucose medium containing L-Lactic acid (5-20 mM), and Teff proliferation was detected by Flow cytometry. **RESULTS**: L-Lactic acid had a sustained inhibitory effect on T cell proliferation, and apoptosis-independent effect. [1] **METHODS**: T cells were cultured in medium containing L-Lactic acid (20 mM), and ROS levels were measured using ROS and superoxide detection assay kits. **RESULTS**: A significant reduction in ROS and O2- production was observed in L-Lactic acid-treated T cells. [2]
In vivo	**METHODS**: To study its effect on swimming endurance, L-Lactic acid (25-50 mg/kg in 0.9% NaCl) was administered intraperitoneally to ICR mice. **RESULTS**: L-Lactic acid enhanced the swimming endurance of mice, and the effect was dose-dependent. [3] **METHODS**: To investigate the effect on endotoxemia, L-Lactic acid (80 mg/kg) was intraperitoneally injected into mice, and 20 h later, a lethal dose of LPS (25 mg/kg) was intraperitoneally injected into mice to induce infectious shock. **RESULTS**: L-Lactic acid significantly inhibited LPS-induced cytokine induction in mice following endotoxemia.L-Lactic acid treatment decreased glucose uptake and lactate output during LPS stimulation. [4]

Solubility Information

Solubility	DMSO: 50 mg/mL (555.06 mM),Sonication is recommended. 5% DMSO+95% Saline: 2.63 mg/mL (29.2 mM),Solution. Saline: 50 mg/mL (555.06 mM),Solution. 10% DMSO+90% Saline: 5 mg/mL (55.51 mM),Solution. (< 1 mg/ml refers to the product slightly soluble or insoluble)

Preparing Stock Solutions

	1mg	5mg	10mg
1 mM	11.1012 mL	55.5062 mL	111.0124 mL
5 mM	2.2202 mL	11.1012 mL	22.2025 mL
10 mM	1.1101 mL	5.5506 mL	11.1012 mL
50 mM	0.222 mL	1.1101 mL	2.2202 mL

Please select the appropriate solvent to prepare the stock solution, according to the solubility of the product in different solvents. Please use it as soon as possible.

Reference

Quinn WJ 3rd, et al. Lactate Limits T Cell Proliferation via the NAD(H) Redox State. Cell Rep. 2020 Dec 15;33(11): 108500.
Rostamian H, et al. Restricting tumor lactic acid metabolism using dichloroacetate improves T cell functions. BMC Cancer. 2022 Jan 6;22(1):39.
Zhang G, et al. L-lactic acid's improvement of swimming endurance in mice. Int J Sport Nutr Exerc Metab. 2009 Dec;19(6):673-84.
Caslin HL, et al. Lactic Acid Inhibits Lipopolysaccharide-Induced Mast Cell Function by Limiting Glycolysis and ATP Availability. J Immunol. 2019 Jul 15;203(2):453-464.
Walenta S , Schroeder T , Mueller-Klieser W . Lactate in Solid Malignant Tumors: Potential Basis of a Metabolic Classification in Clinical Oncology[J]. Current Medicinal Chemistry, 2004, 11(16):2195-2204.