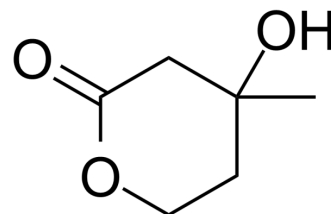


DL-Mevalonolactone

Cat. No.:	HY-107855		
CAS No.:	674-26-0		
Molecular Formula:	C ₆ H ₁₀ O ₃		
Molecular Weight:	130.14		
Target:	Endogenous Metabolite		
Pathway:	Metabolic Enzyme/Protease		
Storage:	Pure form	-20°C	3 years
		4°C	2 years
	In solvent	-80°C	6 months
		-20°C	1 month



SOLVENT & SOLUBILITY

In Vitro

DMSO : 100 mg/mL (768.40 mM; Need ultrasonic)
 H₂O : 50 mg/mL (384.20 mM; Need ultrasonic)

	Solvent Concentration	Mass		
		1 mg	5 mg	10 mg
Preparing Stock Solutions	1 mM	7.6840 mL	38.4202 mL	76.8403 mL
	5 mM	1.5368 mL	7.6840 mL	15.3681 mL
	10 mM	0.7684 mL	3.8420 mL	7.6840 mL

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

In Vivo

- Add each solvent one by one: PBS
Solubility: 110 mg/mL (845.24 mM); Clear solution; Need ultrasonic
- Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
Solubility: ≥ 2.08 mg/mL (15.98 mM); Clear solution
- Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
Solubility: ≥ 2.08 mg/mL (15.98 mM); Clear solution
- Add each solvent one by one: 10% DMSO >> 90% corn oil
Solubility: ≥ 2.08 mg/mL (15.98 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

DL-Mevalonolactone ((±)-Mevalonolactone; Mevalolactone) is the δ-lactone form of mevalonic acid, a precursor in the mevalonate pathway. DL-Mevalonolactone is orally active against HMGCR mutation and statin caused myopathy^[3]. DL-Mevalonolactone induces inflammation and oxidative stress response with decreased mitochondrial membrane potential (MMP) and induces mitochondrial swelling^{[2][4]}.

IC₅₀ & Target	Human Endogenous Metabolite								
In Vitro	<p>DL-Mevalonolactone (0.1-1 mM, 0-72 h) induces inflammatory response with upregulated IL1B expression, induces oxidative stress with mitochondrial membrane depolarization and increased levels of SOD2, HemeOX and ROS^[4]. DL-Mevalonolactone (1-2 mM) promotes peroxidation, inhibits activity of aconitase in brain^[2]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.</p> <p>Real Time qPCR^[4]</p> <table border="1"> <tr> <td>Cell Line:</td> <td>U87-MG</td> </tr> <tr> <td>Concentration:</td> <td>0.1-1 mM</td> </tr> <tr> <td>Incubation Time:</td> <td>72 h</td> </tr> <tr> <td>Result:</td> <td>Increased SOD, HemeOX and IL1B expression</td> </tr> </table>	Cell Line:	U87-MG	Concentration:	0.1-1 mM	Incubation Time:	72 h	Result:	Increased SOD, HemeOX and IL1B expression
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Concentration:	0.1-1 mM								
Incubation Time:	72 h								
Result:	Increased SOD, HemeOX and IL1B expression								
In Vivo	<p>DL-Mevalonolactone exhibits efficacy against statin induced myopathy in C57BL/6 mice (200 mg/kg, p.o. for 14 days), without toxicity (2 g/kg, p.o. for 7 days)^[3]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.</p> <table border="1"> <tr> <td>Animal Model:</td> <td>C57BL/6 mice with cerivastatin/simvastatin induced myopathy^[3]</td> </tr> <tr> <td>Dosage:</td> <td>200 mg/kg</td> </tr> <tr> <td>Administration:</td> <td>oral gavage</td> </tr> <tr> <td>Result:</td> <td>Increased muscle strength and endurance in hanging wire and grip tests.</td> </tr> </table>	Animal Model:	C57BL/6 mice with cerivastatin/simvastatin induced myopathy ^[3]	Dosage:	200 mg/kg	Administration:	oral gavage	Result:	Increased muscle strength and endurance in hanging wire and grip tests.
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CUSTOMER VALIDATION

- EMBO Mol Med. 2024 Feb 14.

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REFERENCES

- [1]. Yogev Y, et al., Limb girdle muscular disease caused by HMGCR mutation and statin myopathy treatable with mevalonolactone. Proc Natl Acad Sci U S A. 2023 Feb 14;120(7):e2217831120.
- [2]. Gratton R, et al., Prolonged treatment with mevalonolactone induces oxidative stress response with reactive oxygen species production, mitochondrial depolarization and inflammation in human glioblastoma U-87 MG cells. Neurochem Int. 2018 Nov;120:233-237.
- [3]. Domingos SR, et al. On the structural intricacies of a metabolic precursor: Direct spectroscopic detection of water-induced conformational reshaping of mevalonolactone. J Chem Phys. 2017 Sep 28;147(12):124310.
- [4]. Cecatto C, et al. Mevalonolactone disrupts mitochondrial functions and induces permeability transition pore opening in rat brain mitochondria: Implications for the pathogenesis of mevalonic aciduria. Neurochem Int. 2017 Sep;108:133-145.

Caution: Product has not been fully validated for medical applications. For research use only.

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