Dimethyl malonate

Cat. No.: HY-Y1787

CAS No.: 108-59-8

Molecular Formula: $C_5H_8O_4$

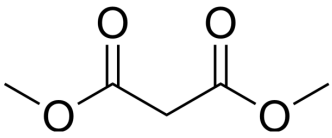
Molecular Weight: 132.11

Target: Apoptosis

Pathway: Apoptosis

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 (756.94 mM; Need ultrasonic)

H_2O : 100 mg/mL (756.94 mM; Need ultrasonic)

Preparing Stock Solutions

Solvent / Mass / Concentration	1 mg	5 mg	10 mg
1 mM	7.5694 mL	37.8472 mL	75.6945 mL
5 mM	1.5139 mL	7.5694 mL	15.1389 mL
10 mM	0.7569 mL	3.7847 mL	7.5694 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 (18.92 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 2.5 mg/mL (18.92 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.5 mg/mL (18.92 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Dimethyl malonate is a competitive inhibitor of succinate dehydrogenase (SDH). Dimethyl malonate is able to cross the blood-brain barrier and hydrolyse to malonate. Dimethyl malonate reduces neuronal apoptosis[1].

In Vivo

Dimethyl malonate (6 mg/kg/min; intravenous infusion; 51 min) promotes return of spontaneous circulation (ROSC) and neurological performance in rats after cardiac arrest[1].

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

Animal Model:	Sprague-Dawley male rats, cardiac arrest model[1]
Dosage:	6 mg/kg/min
Administration:	Intravenous infusion, 51 min
Result:	Improved ROSC after CA. Prevented the decline in neurological function and inhibited the apoptosis of hippocampal neurons at day 3 after CPR. Inhibited caspase-3 cleavage and increased HIF-1α expression at day 3 after CPR. Decreased the level of oxidative stress at day 3 after CPR. Inhibited excessive hyperpolarization of MMP and restrained the leakage of cytochrome C after 45 min reperfusion.

REFERENCES

[1]. Xu J, et al. Inhibiting Succinate Dehydrogenase by Dimethyl Malonate Alleviates Brain Damage in a Rat Model of Cardiac Arrest. Neuroscience. 2018 Nov 21;393:24-32.

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