Meldonium dihydrate

Cat. No.: HY-B1836A

CAS No.: 86426-17-7

Molecular Formula: $C_6H_{18}N_2O_4$

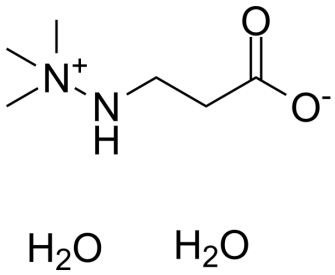
Molecular Weight: 182.22

Target: Mitochondrial Metabolism

Pathway: Metabolic Enzyme/Protease

Storage:

Powder	-20°C	3 years
	4°C	2 years
In solvent	-80°C	6 months
	-20°C	1 month



SOLVENT & SOLUBILITY

In Vitro

H_2O : 100 mg/mL (548.79 mM; Need ultrasonic)
DMSO : 4.85 mg/mL (26.62 mM; ultrasonic and warming and adjust pH to 4 with HCl and heat to 60°C)

Preparing Stock Solutions

Solvent / Mass / Concentration	1 mg	5 mg	10 mg
1 mM	5.4879 mL	27.4394 mL	54.8787 mL
5 mM	1.0976 mL	5.4879 mL	10.9757 mL
10 mM	0.5488 mL	2.7439 mL	5.4879 mL

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

BIOLOGICAL ACTIVITY

Description

Meldonium (MET-88) dihydrate functions as a cardioprotective agent by cpmpetetively inhibiting γ-butyrobetaine hydroxylase (BBOX) and carnitine/organic cation transporter type 2 (OCTN2). Mildronate dihydrate exhibits IC_{50} values of 34-62 μM for human recombinant BBOX and an EC_{50} of 21 μM for human OCTN2. Meldonium dihydrate is a fatty acid oxidation inhibitor[1][2].

IC_{50} & Target

IC50: 34-62 μM (human recombinant BBOX).
EC50: 21 μM (human OCTN2).

In Vitro

Meldonium (20-40 μM; 24 h) dihydrate ameliorates lung injury by targeting PFKP to regulate glycolysis, which promotes Nrf2 translocation from the cytoplasm to the nucleus to alleviate oxidative stress and mitochondrial damage under hypoxic condition[3].

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

RT-PCR[3]

Cell Line:	Rat alveolar type II epithelial RLE-6TN cells in hypoxia incubator
Concentration:	20, or 40 μM
Incubation Time:	24 h
Result:	Significantly decreased the mRNA expression of PFKP, PDK1, and PKM2 compared with the hypoxia group.

Western Blot Analysis[3]

Cell Line:	Rat alveolar type II epithelial RLE-6TN cells in hypoxia incubator
Concentration:	20, or 40 μM
Incubation Time:	24 h
Result:	Significantly reduced the protein expression of PFKP, PKM2, and LDHA.

In Vivo

Meldonium (50, 100, or 200 mg/kg; once daily for 3 days) dihydrate modestly attenuates hypoxia-induced lung injury in mice [3].

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

CUSTOMER VALIDATION

- J Pharmaceut Biomed. 2020, 113870.
- J Anim Sci. 2022 Mar 5;skac069.

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REFERENCES

[1]. Daohui Wang, et al. Meldonium Ameliorates Hypoxia-Induced Lung Injury and Oxidative Stress by Regulating Platelet-Type Phosphofructokinase-Mediated Glycolysis. Front Pharmacol. 2022 Apr 5:13:863451.

[2]. Dambrova M, et al. Pharmacological effects of meldonium: Biochemical mechanisms and biomarkers of cardiometabolic activity. Pharmacol Res. 2016 Nov;113(Pt B):771-780.

[3]. Schobersberger W, et al. Story behind meldonium-from pharmacology to performance enhancement: a narrative review. Br J Sports Med. 2017 Jan;51(1):22-25.

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

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