Dantrolene

Cat. No.: HY-12542

CAS No.: 7261-97-4

Molecular Formula: $C_{14}H_{10}N_4O_5$

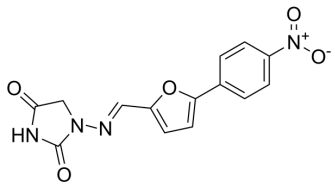
Molecular Weight: 314

Target: Calcium Channel; Autophagy

Pathway: Membrane Transporter/Ion Channel; Neuronal Signaling; Autophagy

Storage:

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



SOLVENT & SOLUBILITY

In Vitro

DMSO : ≥ 20 mg/mL (63.69 mM)

* "≥" means soluble, but saturation unknown.

Preparing Stock Solutions

Solvent / Mass / Concentration	1 mg	5 mg	10 mg
1 mM	3.1847 mL	15.9236 mL	31.8471 mL
5 mM	0.6369 mL	3.1847 mL	6.3694 mL
10 mM	0.3185 mL	1.5924 mL	3.1847 mL

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

In Vivo

1. Dantrolene is suspended in 50 μL of PBS with 2% corn flour[5].

BIOLOGICAL ACTIVITY

Description

Dantrolene is an orally active, non-competitive glutathione reductase inhibitor with a K_i of 111.6 μM and an IC_{50} of 52.3 μM. Dantrolene is a ryanodine receptor (RyR) antagonist and Ca2+ signaling stabilizer. Dantrolene is a direct-acting skeletal muscle relaxant. Dantrolene can be used for the research of muscle spasticity, malignant hyperthermia, Huntington's disease and other neuroleptic malignant syndrome[1][2][3].

In Vitro

Dantrolene (60 μM; at 1 and 3 days) significantly inhibits ACTA2 expression and upregulats RUNX2 expression in paVICs[2].
Dantrolene (60 μM; overnight pretreatment) inhibits LPC-induced calcium flux in porcine aortic valve interstitial cells[2].
Dantrolene (10, 30, 60 μM) inhibited calcific nodule formation of paVICs due to 10 μM lysophosphatidylcholine (LPC)[2].
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

RT-PCR[2]

Cell Line:	Porcine aortic valvular interstitial cells (paVICs)
Concentration:	60 μM
Incubation Time:	At 1 and 3 days
Result:	Significantly inhibited ACTA2 expression and upregulated RUNX2 expression.

In Vivo

Dantrolene (5 mg/kg; fed orally twice per week) improves performance in the beam-walking and gait-walking assay[3]. Dantrolene (10 mg/kg; IP; three days per week; for 40-60 days) significantly improves gait, reduces LC3-II levels, improves mitochondrial ATP production and reduced inflammation in the brain. Dantrolene partially reduces autophagy and the expression of CALM (calmodulin) in the brain of neuronopathic Gaucher disease mice[4].

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

Animal Model:	YAC128 transgenic mice (FVBN/NJ background strain) and WT mice[3]
Dosage:	5 mg/kg
Administration:	Fed orally twice per week from 2 to 11.5 months of age
Result:	Resulted in significantly improved performance in the beam-walking and gait-walking assays. Significantly reduced the loss of NeuN-positive striatal neurons and reduced formation of Httexp nuclear aggregates.

CUSTOMER VALIDATION

- Cell Res. 2022 Mar;32(3):288-301.
- Front Immunol. 2021 Jul 7;12:688674.
- J Anim Sci Biotechnol. 2022 Feb 11;13(1):9.
- Anim Nutr. 28 September 2021.
- J Cell Commun Signal. 2023 Sep 13.

See more customer validations on www.MedChemExpress.com

REFERENCES

[1]. Christopher B Sylvester, et al. Dantrolene inhibits lysophosphatidylcholine-induced valve interstitial cell calcific nodule formation via blockade of the ryanodine receptor. Front Cardiovasc Med. 2023 Mar 30:10:1112965.

[2]. Benjamin Liou, et al. Modulating ryanodine receptors with dantrolene attenuates neuronopathic phenotype in Gaucher disease mice. Hum Mol Genet. 2016 Dec 1;25(23):5126-5141.

[3]. F Zhao, et al. Dantrolene inhibition of ryanodine receptor Ca2+ release channels. Molecular mechanism and isoform selectivity. J Biol Chem. 2001 Apr 27;276(17):13810-6.

[4]. Xi Chen, et al. Dantrolene is neuroprotective in Huntington's disease transgenic mouse model. Mol Neurodegener. 2011 Nov 25;6:81.

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

Tel: 609-228-6898 Fax: 609-228-5909 E-mail: tech@MedChemExpress.com
Address: 1 Deer Park Dr, Suite Q, Monmouth Junction, NJ 08852, USA