Dynasore

Cat. No.: HY-15304

CAS No.: 304448-55-3

Molecular Formula: $C_{18}H_{14}N_2O_4$

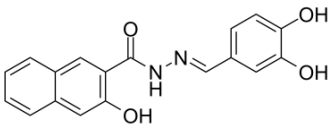
Molecular Weight: 322.31

Target: Dynamin; Autophagy; Virus Protease

Pathway: Cytoskeleton; Autophagy; Anti-infection

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 : ≥ 50 mg/mL (155.13 mM)

* "≥" means soluble, but saturation unknown.

Preparing Stock Solutions

Solvent / Mass / Concentration	1 mg	5 mg	10 mg
1 mM	3.1026 mL	15.5130 mL	31.0260 mL
5 mM	0.6205 mL	3.1026 mL	6.2052 mL
10 mM	0.3103 mL	1.5513 mL	3.1026 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 (7.76 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 2.5 mg/mL (7.76 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Dynasore is a cell-permeable dynamin inhibitor with an IC_{50} of 15 μM.

IC_{50} & Target

IC50: 15 μM (GTPase activity of dynamin1 and 2)[1]

In Vitro

Dynasore interferes with the GTPase activity of dynamin1, dynamin2, and Drp1, the mitochondrial dynamin, but not of other small GTPases. Dynasore acts as a potent inhibitor of endocytic pathways known to depend on dynamin by rapidly blocking coated vesicle formation within seconds of dynasore addition. Two types of coated pit intermediates accumulate during dynasore treatment, g-shaped, half formed pits and O-shaped, fully formed pits, captured while pinching off[1]. Dynasore inhibits HSV-1 and HSV-2 infection of human epithelial and neuronal cells, including primary genital tract cells and human

	fetal neurons and astrocytes. Dynasore reduces the number of viral capsids reaching the nuclear pore if added at the time of viral entry and that, when added as late as 8 h postentry, dynasore blocks the transport of newly synthesized viral proteins from the nucleus to the cytosol[2]. Dynasore prevents ischemia/reperfusion induced elevation of left ventricular end diastolic pressure. Dynasore also decreases cardiac troponin I efflux during reperfusion and reduces infarct size. In cultured adult mouse cardiomyocytes subjected to oxidative stress, dynasore increases cardiomyocyte survival and viability[3]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.
In Vivo	Dynasore ameliorates the motor dysfunction greatly at 3, 7, and 10 days after SCI in rats. Dynasore significantly enhances motor function which may be by inhibiting the activation of neuronal mitochondrial apoptotic pathway and astrocytic proliferation in rats after SCI[4]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

PROTOCOL

Cell Assay [3]	Mouse ventricular myocytes are isolated from male adult C6/Black mouse. Cardiomyocytes subjects to 2 hours of drug treatment followed by oxidative stress (30 μM H_2O_2 for 35 min). For ATP supplement experiments, the cells are treated with 3 mM ATP for 30 min before exposure to H_2O_2. Cardiomyocyte survival and viability are analyzed by trypan blue exclusion (TBE) assay[3]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.
Animal Administration [4]	Rats: In the dynasore groups, the rats are given dynasore immediately at a dose of 1, 10, or 30 mg/kg through intraperitoneal injection after SCI, while the rats in the sham and SCI groups receive DMSO (same volume as dynasore groups) through intraperitoneal injection[4]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

CUSTOMER VALIDATION

- Nat Nanotechnol. 2020 Dec;15(12):1043-1052.
- J Am Chem Soc. 2018 Dec 12;140(49):17234-17240.
- Small Methods. 2020 Dec 18.
- Nano Lett. 2019 Nov 13;19(11):8010-8020.
- Sci Bull. 2020 Jul.

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REFERENCES

[1]. Macia E, et al. Dynasore, a cell-permeable inhibitor of dynamin. Dev Cell. 2006 Jun;10(6):839-50.

[2]. Mues MB, et al. Dynasore disrupts trafficking of herpes simplex virus proteins. J Virol. 2015 Jul;89(13):6673-84.

[3]. Gao D, et al. Dynasore protects mitochondria and improves cardiac lusitropy in Langendorff perfused mouse heart. PLoS One. 2013 Apr 15;8(4):e60967.

[4]. Li G, et al. Dynasore Improves Motor Function Recovery via Inhibition of Neuronal Apoptosis and Astrocytic Proliferation after Spinal Cord Injury in Rats. Mol Neurobiol. 2016 Nov 7.

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