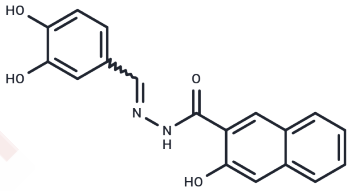
Data Sheet (Cat.No.T1848)

TargetMol

Dynasore

Chemical Properties



CAS No. : 304448-55-3

Formula: C18H14N2O4

Molecular Weight: 322.31

Storage: Powder: -20°C for 3 years | In solvent: -80°C for 1 year
Actual storage temperature shall be subject to the COA.

Biological Description

Description	Dynasore (Dynamin Inhibitor I) is a highly selective, reversible small-molecule dynamin inhibitor with an IC_{50} of 15 μM. Dynasore also inhibits the mitochondrial dynamin Drp1 without affecting other small GTPases. By inhibiting the GTPase activity of dynamin, Dynasore blocks its function in membrane fission, thereby inhibiting clathrin-mediated endocytosis. Dynasore can be used in research on endocytosis, membrane transport, viral entry, and receptor signaling regulation.
Targets(IC50)	Autophagy,HSV,Dynamin,Virus Protease
In vitro	**Methods**: Mouse bone marrow-derived macrophages were pretreated with 5, 10, 25, or 50 μM Dynasore for 1 hour, then stimulated with 100 ng/mL LPS for 24 hours. Supernatants and cell lysates were collected. Pro-inflammatory cytokine expression levels were detected by real-time quantitative PCR. **Results**: Dynasore dose-dependently inhibited LPS-induced mRNA and protein levels of proinflammatory cytokines (TNF-α, IL-6, IL-12). [1] **Methods**: HCLE cells (Fluo-4 loaded) were pretreated with 40 μM Dynasore or 1 μM YM-58483 for 30 min, followed by induction of oxidative stress with 1 mM tBHP. Cytoplasmic calcium changes were monitored in real-time via fluorescence intensity over 2 hours. **Results**: Dynasore completely blocked tBHP-induced increases in cytoplasmic calcium. [2] **Methods**: Horizontal brainstem slices containing the solitary tract and solitary tract nucleus were prepared from adult rats. Whole-cell patch-clamp recordings were performed on NTS neurons at a clamp voltage of -60 mV. 100 μM Dynasore dissolved in artificial cerebrospinal fluid was continuously administered via a perfusion system. Postsynaptic currents were recorded at different time points (pre-administration, during administration, post-washout). **Results**: Dynasore rapidly increased the frequency of spontaneous excitatory postsynaptic currents (EPSCs). Concurrently, ST-evoked EPSCs progressively failed until completely blocked, with no reversal during the recovery period.[3]
In vivo	**Methods**: An acute lung injury (ALI) model was established in C57BL/6J mice via intratracheal LPS (10 mg/kg) administration. Dynasore (10, 30, 50 mg/kg) was administered as a single intraperitoneal injection 3 hours prior to LPS challenge. Mice were euthanized 24 hours after LPS stimulation. **Results**: Dynasore pretreatment (particularly at 30 and 50 mg/kg) significantly reduced lung tissue histopathology scores and decreased inflammatory mediators. [1]

Kinase Assay	RIP1 kinase assay: Phosphorylation of RIP1 requires its kinase activity. Expression constructs of FLAGtagged wild-type (WT) or a kinase-inactive point mutant of RIP1 (K45M) are are transfected into 293T cells and RIP1 kinase assay is performed as described in the Methods in the presence of [γ-32P]ATP for 30 min at 30℃. Samples are subjected to SDS-PAGE and RIP1 band is visualized by autoradiography. Relative intensities of radioactive bands are quantified and are shown (ratio) in this and all other autoradiographs. In parallel to kinase reactions, a sample of beads is subjected to western blot analysis using anti-RIP1 antibody to ensure equal protein amounts in kinase reactions.
Cell Research	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 Water2 for 35 min). For ATP supplement experiments, the cells are treated with 3 mM ATP for 30 min before exposure to Water2. Cardiomyocyte survival and viability are analyzed by trypan blue exclusion (TBE) assay[3].

Solubility Information

Solubility	Ethanol: 1.6 mg/mL (4.96 mM),Sonication is recommended. DMSO: 120 mg/mL (372.31 mM),Sonication is recommended. (< 1 mg/ml refers to the product slightly soluble or insoluble)
In vivo Formulation	10% DMSO+40% PEG300+5% Tween 80+45% Saline: 4 mg/mL (12.41 mM),Sonication is recommended. *Please add the solvents sequentially, clarifying the solution as much as possible before adding the next one. Dissolve by heating and/or sonication if necessary. Working solution is recommended to be prepared and used immediately. The formulation provided above is for reference purposes only. In vivo formulations may vary and should be modified based on specific experimental conditions.*

Preparing Stock Solutions

	1mg	5mg	10mg
1 mM	3.1026 mL	15.513 mL	31.026 mL
5 mM	0.6205 mL	3.1026 mL	6.2052 mL
10 mM	0.3103 mL	1.5513 mL	3.1026 mL
50 mM	0.0621 mL	0.3103 mL	0.6205 mL

Please select the appropriate solvent to prepare the stock solution, according to the solubility of the product in different solvents. Please use it as soon as possible.

Note: The dilution table applies only to solid products. For liquid products, please calculate the stock solution based on the stated concentration and/or density.

Reference

Shan M, et al. Dynasore Alleviates LPS-Induced Acute Lung Injury by Inhibiting NLRP3 Inflammasome-Mediated Pyroptosis. Drug Des Devel Ther. 2024 Apr 23;18:1369-1384.
Zhao Z, Wei Z, Zheng J, et al.Hepatitis B virus promotes its own replication by enhancing RAB5A-mediated dual activation of endosomal and autophagic vesicle pathways: RAB5A promotes HBV replication.Emerging Microbes & Infections.2023 (just-accepted): 2261556.
Xia T, Liu Z, Du Y, et al.Bifunctional iRGD-Exo-DOX crosses the blood-brain barrier to target central nervous system lymphoma.Biochemical Pharmacology.2024: 116138.
Ma M, Li X, Jing M, et al.Enhanced Tumor-Targeted Delivery of Arginine-Rich Peptides via a Positive Feedback Loop Orchestrated by Piezo1/integrin β1 Signaling Axis.Advanced Science.2024: 2409081.
Martínez-Carrasco R, et al. Dynasore modulates store-operated calcium entry and mitochondrial calcium release in corneal epithelial cells. Exp Eye Res. 2024 Oct;247:110029.
Zhu X, Zhao Y, Liu Y, et al.Macrophages release IL11-containing filopodial tip vesicles and contribute to renal interstitial inflammation.Cell Communication and Signaling.2023, 21(1): 1-17.
Wang T, Wang L, Li W, et al.Fowl adenovirus serotype 4 enters leghorn male hepatocellular cells via the clathrin-mediated endocytosis pathway.Veterinary Research.2023, 54(1): 1-14.
Hofmann ME, et al. Dynasore blocks evoked release while augmenting spontaneous synaptic transmission from primary visceral afferents. PLoS One. 2017 Mar 30;12(3):e0174915.
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.
Xu L L, Zhang X, Jiang Z Y, et al. Molecular similarity guided optimization of novel Nrf2 activators with 1, 2, 4-oxadiazole core. Bioorganic & medicinal chemistry. 2016, 24(16): 3540-3547.
Jiang K, Hou X, Tan T, et al. Scavenger receptor-C acts as a receptor for Bacillus thuringiensis vegetative insecticidal protein Vip3Aa and mediates the internalization of Vip3Aa via endocytosis. PLoS Pathogens. 2018 Oct 4;14(10):e1007347
Xu L L, Zhang X, Jiang Z Y, et al. Molecular similarity guided optimization of novel Nrf2 activators with 1, 2, 4-oxadiazole core[J]. Bioorganic & medicinal chemistry. 2016, 24(16): 3540-3547.
Wang X, Chen Q Z, Zan Y X, et al. . Exosomal miR-145-5p derived from orthohantavirus-infected endothelial cells inhibits HTNV infection. The FASEB Journal. 2020, 34(10): 13809-13825.
Zhang Y, Xue W, Zhang W, et al. Histone methyltransferase G9a protects against acute liver injury through GSTP1. Cell Death & Differentiation. 2020, 27(4): 1243-1258
Zhong B, Shi D, Wu F, et al. Dynasore suppresses cell proliferation, migration, and invasion and enhances the antitumor capacity of cisplatin via STAT3 pathway in osteosarcoma[J]. Cell death & disease. 2019, 10(10): 1-16.
Zhong B, Shi D, Wu F, et al. Dynasore suppresses cell proliferation, migration, and invasion and enhances the antitumor capacity of cisplatin via STAT3 pathway in osteosarcoma. Cell Death & Disease. 2019, 10(10): 1-16
Jiang K, Hou X, Tan T, et al. Scavenger receptor-C acts as a receptor for Bacillus thuringiensis vegetative insecticidal protein Vip3Aa and mediates the internalization of Vip3Aa via endocytosis[J]. PLoS pathogens. 2018 Oct 4;14(10):e1007347.
Lu J Y, Huang W T, Zhou K, et al. Microbial Lipopeptide Supramolecular Self-Assemblies as a Methuosis-Like Cell Death Inducer with In Vivo Antitumor Activity. Small. 2021: 2104034.
Zhang Y, Xue W, Zhang W, et al. Histone methyltransferase G9a protects against acute liver injury through GSTP1. Cell Death & Differentiation. 2019: 1-16.
Wang X, Chen Q Z, Zan Y X, et al. Exosomal miR-145-5p derived from orthohantavirus-infected endothelial cells inhibits HTNV infection. The FASEB Journal. 2020, 34(10): 13809-13825.

Inhibitor · Natural Compounds · Compound Libraries · Recombinant Proteins

This product is for Research Use Only· Not for Human or Veterinary or Therapeutic Use

Tel:781-999-4286 E_mail:info@targetmol.com Address:34 Washington Street,Wellesley Hills,MA 02481