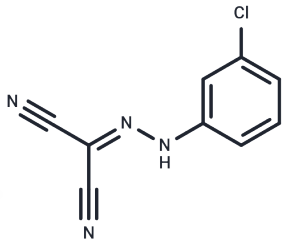
Data Sheet (Cat.No.T7081)

TargetMol

CCCP

Chemical Properties



CAS No. :	555-60-2
Formula:	C9H5ClN4
Molecular Weight:	204.62
Storage:	Store at low temperature 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	CCCP (Carbonyl Cyanide m-Chlorophenylhydrazone) is an oxidative phosphorylation (OXPHOS) inhibitor and mitochondrial proton carrier uncoupler. CCCP inhibits the activation of STING and its downstream signaling molecules TBK1 and IRF3.
Targets(IC50)	Apoptosis,PTEN,OXPHOS,Mitochondrial Metabolism,Antibacterial,COX,IFNAR,IκB/IKK, STING
In vitro	**METHODS**: Human cervical cancer cells HeLa were treated with CCCP (20 μM) for 30 min, and the effect on the mitochondria-labeled fluorescent dye DiOC6 was observed using live cell fluorescence microscopy. **RESULTS**: CCCP-induced loss of mitochondrial membrane potential resulted in efflux of DiOC6 from mitochondria into the cytoplasm and subsequent localization to punctate structures. [1] **METHODS**: Mouse alveolar epithelial cells, MLE-12, were treated with CCCP (10-50 μM) for 2-18 h. The expression levels of the target proteins were examined by Western Blot. **RESULTS**: CCCP caused a dose- and time-dependent conversion of LC3-I to LC3-II. [2]
In vivo	**METHODS**: To assay in vivo activity, CCCP (5 mg/kg) was administered as a single intraperitoneal injection to adult and aged C57BL/6J mice, and hearts were collected 12 h later. **RESULTS**: Under CCCP-treated conditions, more mitochondria bound to autophagic vesicles were found in the hearts of adult but not aged mice. [3] **METHODS**: To assay in vivo activity, CCCP (1 mg/kg) was administered intraperitoneally to mt-Rosella mice once a day for three days. **RESULTS**: Mitochondrial fragments were readily visible on the hearts of CCCP-treated mice, and these fragments were trapped in lysosomes for degradation.CCCP induced mitochondrial autophagy. [4]

Solubility Information

Solubility	DMSO: 252.5 mg/mL (1233.99 mM),Sonication is recommended. Ethanol: 5 mg/mL (24.44 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: 6 mg/mL (29.32 mM),Suspension. *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*

In vivo Formulation	*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	4.8871 mL	24.4355 mL	48.8711 mL
5 mM	0.9774 mL	4.8871 mL	9.7742 mL
10 mM	0.4887 mL	2.4436 mL	4.8871 mL
50 mM	0.0977 mL	0.4887 mL	0.9774 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

Padman BS, et al. The protonophore CCCP interferes with lysosomal degradation of autophagic cargo in yeast and mammalian cells. Autophagy. 2013 Nov 1;9(11):1862-75.
Xu Q, Fu Q, Li Z, et al. The flavonoid procyanidin C1 has senotherapeutic activity and increases lifespan in mice. Nature Metabolism. 2021: 1-21.
Fan Y, Li C, Bai S, et al. NIR-II Emissive Ru (II) Metallacycle Assisting Fluorescence Imaging and Cancer Therapy. Small. 2022: 2201625
Kagan VE, et al. NDPK-D (NM23-H4)-mediated externalization of cardiolipin enables elimination of depolarized mitochondria by mitophagy. Cell Death Differ. 2016 Jul;23(7):1140-51.
Hoshino A, et al. Cytosolic p53 inhibits Parkin-mediated mitophagy and promotes mitochondrial dysfunction in the mouse heart. Nat Commun. 2013;4:2308.
Zhang Y, Xu X, Hu M, et al. SPATA33 is an autophagy mediator for cargo selectivity in germline mitophagy. Cell Death & Differentiation. 2020: 1-15.
Luo P, Yan H, Du J, et al. PLK1 (polo like kinase 1)-dependent autophagy facilitates gefitinib-induced hepatotoxicity by degrading COX6A1 (cytochrome c oxidase subunit 6A1). Autophagy. 2021 Oct;17(10):3221-3237.
Kobayashi S, et al. Novel Dual-Fluorescent Mitophagy Reporter Reveals a Reduced Mitophagy Flux in Type 1 Diabetic Mouse Heart. J Am Osteopath Assoc. 2020 Jul 1;120(7):446-455.
Zhang Y, Xu X, Hu M, et al. SPATA33 is an autophagy mediator for cargo selectivity in germline mitophagy[J]. Cell Death & Differentiation. 2020: 1-15.
Liu C, Wang L, Wang P, et al.The Mechanism of Tigecycline Resistance in Acinetobacter baumannii Revealed by Proteomic and Genomic Analysis.International Journal of Molecular Sciences.2023, 24(10): 8652.
Wang K, Zhou Z, Huang L, et al.PINK1 dominated mitochondria associated genes signature predicts abdominal aortic aneurysm with metabolic syndrome.Biochimica et Biophysica Acta (BBA)-Molecular Basis of Disease.2024, 1870(2): 166919.
Liu C, Liu J, Lu Q, et al.The Mechanism of Tigecycline Resistance in Acinetobacter baumannii under Sub-Minimal Inhibitory Concentrations of Tigecycline.International Journal of Molecular Sciences.2024, 25(3): 1819.
Malla S, Nyinawabera A, Neupane R, et al.Novel Thienopyrimidine-Hydrazinyl Compounds Induce DRP1-Mediated Non-Apoptotic Cell Death in Triple-Negative Breast Cancer Cells.Cancers.2024, 16(15): 2621.
Hu K, Lai Y, Zhou J, et al.Aberrant activation of adenine nucleotide translocase 3 promotes progression and chemoresistance in multiple myeloma dependent on PINK1 transport.International Journal of Biological Sciences. 2025, 21(1): 233.

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