FCCP

Cat. No.: HY-100410

CAS No.: 370-86-5

Molecular Formula: $C_{10}H_5F_3N_4O$

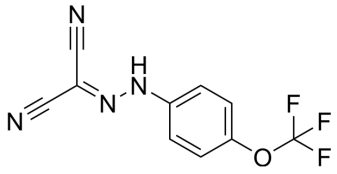
Molecular Weight: 254.17

Target: Mitochondrial Metabolism; Oxidative Phosphorylation

Pathway: Metabolic Enzyme/Protease

Storage:

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



SOLVENT & SOLUBILITY

In Vitro

DMSO : ≥ 100 mg/mL (393.44 mM)

Ethanol : ≥ 33.3 mg/mL (131.01 mM)

* "≥" means soluble, but saturation unknown.

Preparing Stock Solutions

Solvent / Mass / Concentration	1 mg	5 mg	10 mg
1 mM	3.9344 mL	19.6719 mL	39.3437 mL
5 mM	0.7869 mL	3.9344 mL	7.8687 mL
10 mM	0.3934 mL	1.9672 mL	3.9344 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 (9.84 mM); Suspended solution; Need ultrasonic and warming
2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: 2.5 mg/mL (9.84 mM); Suspended solution; Need ultrasonic and warming
3. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.5 mg/mL (9.84 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

FCCP is an uncoupler of oxidative phosphorylation (OXPHOS) in mitochondria. FCCP induces activation of PINK1 leading to Parkin Ser65 phosphorylation[1].

In Vitro

FCCP (5 μM) results in a concentration-dependent decrease in Aβ and APPsβ production in K695sw cells. FCCP inhibits processing of wild-type APP. FCCP does not alter cellular ATP levels at any of the concentrations measured. The effects of

FCCP on APP catabolism are independent of secondary effects on oxidative phosphorylation or the result of reduced cell viability in K695sw cells. FCCP (5 μM or 500 nM), baf A1, and NH4Cl induce changes in Tf-Tx and Tf-F cellular fluorescence in K695 cells[1].

FCCP (200 nM) protects and enhances the follicle integrity in cat ovarian tissue during short-term in vitro culture. But FCCP does not appear to exert a beneficial or detrimental effect during ovarian tissue cryopreservation[2].

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

PROTOCOL

Cell Assay [1]

K695sw cells are maintained and exposed to vehicle or various concentrations of FCCP as mentioned above with the exception that cells are plated at a density of 20,000 cells per well in 96-well plates. Twenty-four hours after plating, cells are exposed to various treatments in Dulbecco's modified Eagle's medium supplemented with sodium pyruvate (1 mM). At the same time as drug exposures, YO-PRO (4 μM) is added to each well, and its uptake is quantified every 30 min for 1 day at 37°C using a Cytofluor 2350 fluorometric plate reader. As a positive control, all wells are exposed to 0.1% Triton X-100 at the end of the experiment[1].

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

CUSTOMER VALIDATION

- Nature. 2023 Sep;621(7977):188-195.
- Cell Metab. 2022 Aug 11;S1550-4131(22)00310-2.
- Cell Stem Cell. 2021 Sep 14;S1934-5909(21)00343-X.
- Nat Cancer. 2022 Aug;3(8):945-960.
- Natl Sci Rev. 2021 Feb 10;8(7):nwab024.

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REFERENCES

[1]. Connop BP et al.Novel effects of FCCP [carbonyl cyanide p-(trifluoromethoxy)phenylhydrazone] on amyloid precursor protein processing. J Neurochem. 1999 Apr;72(4):1457-65.

[2]. Tanpradit N, et al. Carbonyl cyanide 4-(trifluoromethoxy)phenylhydrazone (FCCP) pre-exposure ensures follicle integrity during in vitro culture of ovarian tissue but not during cryopreservation in the domestic cat model. J Assist Reprod Genet. 2016 Dec;33(12):1621-1631. Epub 2016 Sep 17.

[3]. Kondapalli C, et al. PINK1 is activated by mitochondrial membrane potential depolarization and stimulates Parkin E3 ligase activity by phosphorylating Serine 65. Open Biol. 2012 May;2(5):120080.

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