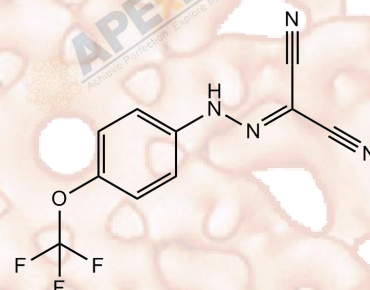


# Product Data Sheet

## FCCP

<b>Cat. No.:</b>	B5004
<b>CAS No.:</b>	370-86-5
<b>Formula:</b>	C <sub>10</sub> H <sub>5</sub> F <sub>3</sub> N <sub>4</sub> O
<b>M.Wt:</b>	254.17
<b>Synonyms:</b>	Carbonyl cyanide-4 (trifluoromethoxy) phenylhydrazone
<b>Target:</b>	Mitochondrial membrane
<b>Pathway:</b>	Membrane Transporter/Ion Channel
<b>Storage:</b>	Store at RT



## Solvent & Solubility

insoluble in H<sub>2</sub>O; ≥25 mg/mL in EtOH with ultrasonic; ≥56.6 mg/mL in DMSO with ultrasonic

In Vitro

	Solvent	Mass Concentration	1mg	5mg	10mg
Preparing Stock Solutions		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.

## Biological Activity

Shortsummary

FCCP (CAS 370-86-5), chemically known as carbonyl cyanide p-trifluoromethoxyphenylhydrazone, is a lipophilic mitochondrial uncoupler frequently used in cellular biology research. It functions by transporting protons across mitochondrial membranes, dissipating the proton gradient essential for ATP synthesis. FCCP exhibits potent inhibitory activity (IC<sub>50</sub> = 0.51 μM in T47D cells), effectively disrupting oxidative phosphorylation. Experimentally, FCCP increases cellular oxygen consumption and suppresses hypoxia-inducible factors (HIF-1 α and HIF-2 α), reducing downstream gene expression such as VEGF. In rodent embryos, FCCP impairs mitochondrial function, resulting in decreased ATP production, lower birth weight, and altered metabolic phenotypes in offspring, highlighting its utility in studying metabolic regulation.

	and mitochondrial biology.
IC <sub>50</sub> & Target	
In Vitro	<b>Cell Viability Assay</b>
	Cell Line: PC-3 and DU-145 prostate cancer cells
	Preparation method: The PC-3 cells were transiently transfected with pGL3-VEGF-Luc or pGL3-6xHRE-Luc as test plasmids along with pRL-TK as internal control using Lipofectamine 2000 (Invitrogen). At 4-h post-transfection, medium was replaced with fresh F-12K complete medium with or without rottlerin (Calbiochem) or FCCP. PC-3 cells were harvested 24 h later for dual luciferase assays to determine VEGF promoter activity or HRE-mediated transcriptional activity.
	Reacting conditions: 10 $\mu$ M FCCP for 24 h incubation
In Vivo	Applications: FCCP significantly decreased hypoxic as well as normoxic HIF-1 transcriptional activity which was in part mediated by down-regulation of the oxygen labile HIF-1 $\alpha$ and HIF-2 $\alpha$ protein levels in PC-3 and DU-145 prostate cancer cells. FCCP also decreased the expression of HIF target genes, VEGF and VEGF receptor-2. The mitochondrial uncoupler FCCP may be useful in the inhibition of HIF pathway in tumors.
	<b>Animal experiment</b>
	Animal models: C57BL/6J male mice
	Dosage form: 1 mg/kg, i.p
In Vivo	Applications: The mice pretreated with FCCP had a significantly increased infarct volume within the cortex, striatum, and total hemisphere. Mice receiving FCCP had a significantly increased neurological deficit score compared to the vehicle.
	Preparation method: For the stroke mouse model, FCCP (1 mg/kg, i.p) or vehicle was administered followed by 1-hour transient middle cerebral artery occlusion (tMCAO). Infarct volume was measured after a 23-hour reperfusion, and triphenyl tetrazolium chloride (TTC) staining was used to assess infarct volume.
	Other notes: The technical data provided above is for reference only.

## Product Citations

See more customer validations on [www.apexbt.com](http://www.apexbt.com).

## References

1. Thomas R, Kim MH. Targeting the hypoxia inducible factor pathway with mitochondrial uncouplers. *Molecular and Cellular Biochemistry*, 2007, 296(1-2): 35-44.
2. Grasmick KA, Hu H, Hone EA, Farooqi I, Rellick SL, Simpkins JW, Ren X. Uncoupling of the Electron Transport Chain Compromises Mitochondrial Oxidative Phosphorylation and Exacerbates Stroke Outcomes. *J Neuroinfect Dis*. 2018;9(4):283. doi: 10.4172/2314-7326.1000283. Epub 2018 Dec 31. PMID: 32149160; PMCID: PMC7059652.

## Caution

**FOR RESEARCH PURPOSES ONLY.**

**NOT FOR HUMAN, VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.**

*Specific storage and handling information for each product is indicated on the product datasheet. Most APEx BIO products are stable under the recommended conditions. Products are sometimes shipped at a temperature that differs from the recommended storage temperature. Shortterm storage of many products are stable in the short-term at temperatures that differ from that required for long-term storage. We ensure that the product is shipped under conditions that will maintain the quality of the reagents. Upon receipt of the product, follow the storage recommendations on the product data sheet.*

**APEx BIO Technology**

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