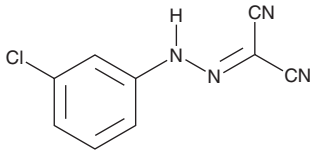
PRODUCT INFORMATION

CCCP

Item No. 25458

CAS Registry No.:	555-60-2
Formal Name:	2-[2-(3-chlorophenyl)hydrazinylidene]-propanedinitrile
Synonyms:	Carbonyl cyanide *m*-chlorophenyl hydrazone, NSC 88124
MF:	$C_9H_5ClN_4$
FW:	204.6
Purity:	≥98%
UV/Vis.:	λ_{max}: 248, 353 nm
Supplied as:	A crystalline solid
Storage:	-20°C
Stability:	≥2 years



Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

Laboratory Procedures

CCCP is supplied as a crystalline solid. A stock solution may be made by dissolving the CCCP in the solvent of choice. CCCP is soluble in organic solvents such as ethanol, DMSO, and dimethyl formamide (DMF), which should be purged with an inert gas. The solubility of CCCP in ethanol is approximately 2 mg/ml and approximately 10 mg/ml in DMSO and DMF.

Further dilutions of the stock solution into aqueous buffers or isotonic saline should be made prior to performing biological experiments. Ensure that the residual amount of organic solvent is insignificant, since organic solvents may have physiological effects at low concentrations. Organic solvent-free aqueous solutions of CCCP can be prepared by directly dissolving the crystalline solid in aqueous buffers. The solubility of CCCP in PBS, pH 7.2, is approximately 0.1 mg/ml. We do not recommend storing the aqueous solution for more than one day.

Description

CCCP is a protonophore mitochondrial uncoupler that increases membrane permeability to protons, leading to a disruption in the mitochondrial membrane potential.[1] It inhibits mitochondrial respiration and ATPase activity when used at concentrations of 110 and 35 nM, respectively.[2] CCCP inhibits activation of stimulation of interferon genes (STING), decreasing the expression of downstream STING targets, including IFN-β, TBK1, and IRF3 when used at a concentration of 50 µM in RAW 264.7 cells.[3] It induces mitochondrial fission in a manner dependent on the GTPase Drp1. CCCP (4 mg/kg) increases body temperature as well as left ventricular systolic and diastolic dimensions and decreases fractional shortening in rats.[4] It also increases myocardial glucose and fatty acid uptake in rats.

References

1. Kane, M.S., Paris, A., Codron, P., *et al.* Current mechanistic insights into the CCCP-induced cell survival response. *Biochem. Pharmacol.* **148**, 100-110 (2018).
2. Terada, H. The interaction of highly active uncouplers with mitochondria. *Biochim. Biophys. Acta.* **639(3-4)**, 225-242 (1981).
3. Kwon, D., Park, E., Sesaki, H., *et al.* Carbonyl cyanide 3-chlorophenylhydrazone (CCCP) suppresses STING-mediated DNA sensing pathway through inducing mitochondrial fission. *Biochem. Biophys. Res. Commun.* **493(1)**, 737-743 (2017).
4. Minanimo-Muta, E., Kato, T., Shioi, T., *et al.* Cardiac effects of acute administration of a protonophore in a rat model. *J. Pharm. Pharmacol.* **70(9)**, 1209-1215 (2018).

CAYMAN CHEMICAL
1180 EAST ELLSWORTH RD
ANN ARBOR, MI 48108 · USA
PHONE: [800] 364-9897
[734] 971-3335
FAX: [734] 971-3640
CUSTSERV@CAYMANCHEM.COM
WWW.**CAYMANCHEM**.COM