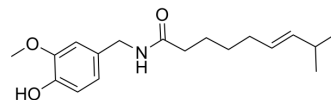


Capsaicin

Cat. No.:	HY-10448
CAS No.:	404-86-4
Molecular Formula:	C ₁₈ H ₂₇ NO ₃
Molecular Weight:	305.41
Target:	TRP Channel; Autophagy; Apoptosis; Endogenous Metabolite
Pathway:	Membrane Transporter/Ion Channel; Neuronal Signaling; Autophagy; Apoptosis; Metabolic Enzyme/Protease
Storage:	4°C, protect from light * In solvent : -80°C, 1 years; -20°C, 6 months (protect from light)



SOLVENT & SOLUBILITY

In Vitro

DMSO : 100 mg/mL (327.43 mM; Need ultrasonic)
Ethanol : 100 mg/mL (327.43 mM; Need ultrasonic)

	Solvent Concentration	Mass		
		1 mg	5 mg	10 mg
Preparing Stock Solutions	1 mM	3.2743 mL	16.3714 mL	32.7429 mL
	5 mM	0.6549 mL	3.2743 mL	6.5486 mL
	10 mM	0.3274 mL	1.6371 mL	3.2743 mL

Please refer to the solubility information to select the appropriate solvent.

In Vivo

- Add each solvent one by one: 10% EtOH >> 90% corn oil
Solubility: ≥ 20 mg/mL (65.49 mM); Clear solution
- Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
Solubility: ≥ 2.5 mg/mL (8.19 mM); Clear solution
- Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
Solubility: ≥ 2.5 mg/mL (8.19 mM); Clear solution
- Add each solvent one by one: 10% DMSO >> 90% corn oil
Solubility: ≥ 2.5 mg/mL (8.19 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Capsaicin ((E)-Capsaicin), an active component of chili peppers, is a TRPV1 agonist. Capsaicin has pain relief, antioxidant, anti-inflammatory, neuroprotection and anti-cancer effects^{[1][2]}.

IC₅₀ & Target

EC50: 290 nM (hTRPV1, in HEK293 cell)^[1]

In Vitro

Capsaicin (50-300 μM ; 24-72 hours) shows an augmented decrease in cell growth in a dose- and time-dependent manner. The observed IC50 value is around 150 μM ^[2].

Capsaicin (50-300 μM ; 24-72 hours) shows increase in cytosolic cytochrome c, activation of caspase 3 and PARP (p85) levels, and decreases anti-apoptotic Bcl-2 protein and increases pro-apoptotic Bad/Bax expression^[2].

Capsaicin increases the nuclear condensation, nuclear DNA fragmentation and sub-G1 DNA content^[2].

Capsaicin suppresses the cell cycle progression at the G1/S phase in FaDu cells by decreasing the expression of the regulators of cyclin B1 and D1, as well as cyclin-dependent protein kinases cdk-1, cdk-2 and cdk-4^[2].

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

Cell Viability Assay^[2]

Cell Line:	Human pharyngeal squamous carcinoma cells (FaDu) cells
Concentration:	50 μM , 100 μM , 200 μM , and 300 μM
Incubation Time:	24 hours, 48 hours and 72 hours
Result:	Showed an augmented decrease in cell growth.

Apoptosis Analysis^[2]

Cell Line:	FaDu cells
Concentration:	50 μM , 100 μM and 200 μM
Incubation Time:	12 hours
Result:	Increased the activity of caspase 3 in a time-dependent manner.

Western Blot Analysis^[2]

Cell Line:	FaDu cells
Concentration:	200 μM
Incubation Time:	24 hours
Result:	The observed activation of caspase 3 and PARP (p85) levels.

In Vivo

Capsaicin suppresses the development of lung carcinoma by amending the protein expressions of apoptotic regulators p53, Bcl-2, Bax and caspase-3^[2].

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

Animal Model:	Swiss albino mice (20-25 g; 8-10 weeks old) induced by Benzo(a)pyrene ^[3]
Dosage:	10 mg/kg
Administration:	Intraperitoneal administration; once in a week; for 14 weeks
Result:	Inhibited the development of mice lung carcinogenesis.

CUSTOMER VALIDATION

- Adv Mater. 2022 Mar;34(11):e2108435.
- Cell Metab. 2022 Nov 11;S1550-4131(22)00490-9.

- Nat Commun. 2023 Apr 17;14(1):2182.
- Neuron. 2020 Nov 25;108(4):707-721.e8.
- Theranostics. 2020 Jun 24;10(17):7906-7920.

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REFERENCES

- [1]. McNamara FN, et al. Effects of piperine, the pungent component of black pepper, at the human vanilloid receptor (TRPV1). Br J Pharmacol. 2005 Mar;144(6):781-90.
- [2]. Shin YH, et al. The Effect of Capsaicin on Salivary Gland Dysfunction. Molecules. 2016 Jun 25;21(7).
- [3]. Anandakumar P, et al. Capsaicin provokes apoptosis and restricts benzo(a)pyrene induced lung tumorigenesis in Swiss albino mice. Int Immunopharmacol. 2013 Jun 6;17(2):254-259.
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Caution: Product has not been fully validated for medical applications. For research use only.

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