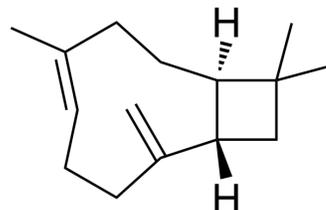


β-Caryophyllene

Cat. No.:	HY-N1415												
CAS No.:	87-44-5												
Molecular Formula:	C ₁₅ H ₂₄												
Molecular Weight:	204.35												
Target:	Cannabinoid Receptor; Endogenous Metabolite												
Pathway:	GPCR/G Protein; Neuronal Signaling; Metabolic Enzyme/Protease												
Storage:	<table border="0"> <tr> <td>Pure form</td> <td>-20°C</td> <td>3 years</td> </tr> <tr> <td></td> <td>4°C</td> <td>2 years</td> </tr> <tr> <td>In solvent</td> <td>-80°C</td> <td>6 months</td> </tr> <tr> <td></td> <td>-20°C</td> <td>1 month</td> </tr> </table>	Pure form	-20°C	3 years		4°C	2 years	In solvent	-80°C	6 months		-20°C	1 month
Pure form	-20°C	3 years											
	4°C	2 years											
In solvent	-80°C	6 months											
	-20°C	1 month											



SOLVENT & SOLUBILITY

In Vitro

Ethanol : ≥ 176.67 mg/mL (864.55 mM)
 DMSO : 25 mg/mL (122.34 mM; Need ultrasonic)
 H₂O : < 0.1 mg/mL (insoluble)
 * "≥" means soluble, but saturation unknown.

Preparing Stock Solutions	Solvent Concentration	Mass		
		1 mg	5 mg	10 mg
	1 mM	4.8936 mL	24.4678 mL	48.9356 mL
	5 mM	0.9787 mL	4.8936 mL	9.7871 mL
	10 mM	0.4894 mL	2.4468 mL	4.8936 mL

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

In Vivo

- Add each solvent one by one: PBS
Solubility: 100 mg/mL (489.36 mM); Clear solution; Need ultrasonic
- Add each solvent one by one: 10% EtOH >> 40% PEG300 >> 5% Tween-80 >> 45% saline
Solubility: ≥ 13.25 mg/mL (64.84 mM); Clear solution
- Add each solvent one by one: 10% EtOH >> 90% (20% SBE-β-CD in saline)
Solubility: 13.25 mg/mL (64.84 mM); Suspended solution; Need ultrasonic
- Add each solvent one by one: 10% EtOH >> 90% corn oil
Solubility: ≥ 13.25 mg/mL (64.84 mM); Clear solution
- Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
Solubility: ≥ 2.5 mg/mL (12.23 mM); Clear solution
- Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
Solubility: ≥ 2.5 mg/mL (12.23 mM); Clear solution
- Add each solvent one by one: 10% DMSO >> 90% corn oil
Solubility: ≥ 2.5 mg/mL (12.23 mM); Clear solution

BIOLOGICAL ACTIVITY

Description	β -Caryophyllene is a CB2 receptor agonist.
IC₅₀ & Target	Human Endogenous Metabolite
In Vitro	<p>Among the tested cancer cells, β-Caryophyllene demonstrates selective anti-proliferative effect against three cancer cell lines, namely HCT 116 (colon cancer, IC₅₀=19 μM), PANC-1 (pancreatic cancer, IC₅₀=27 μM), and HT29 (colon cancer, IC₅₀=63 μM) cells, whereas β-Caryophyllene exhibits either moderate or poor cytotoxic effects against ME-180, PC3, K562 and MCF-7. Results show that β-Caryophyllene possesses higher selectivity towards the colorectal cancer cells (HCT 116), with selectivity index (SI)=27.9, followed by PANC-1 and HT 29 cells with SI=19.6 and 8, respectively. The apoptotic index estimated for β-Caryophyllene treatment on HCT 116 cells after 24 h treatment is 64\pm0.04. β-Caryophyllene at 10 μM concentration, causes significant nuclei condensation after 6 h of treatment. β-caryophyllene exhibits a dose and time-dependent inhibitory effect on the motility of HCT 116 cells^[2].</p> <p>MCE has not independently confirmed the accuracy of these methods. They are for reference only.</p>
In Vivo	<p>Treatment with β-Caryophyllene at different doses does not show any effects on swimming speed during the test. Oral treatment with β-Caryophyllene ameliorates the rise in β-amyloid deposition in the transgenic mice in a roughly dose-dependent manner, and the two higher doses exhibit almost equal effects in modifying the β-amyloid burden. The number of activated astroglial cells is higher in vehicle-treated mouse brains than in β-Caryophyllene-treated mouse brains with different doses. β-Caryophyllene is effective at reducing the enhancement of the COX-2 protein level found in vehicle-treated APP/PS1 mice^[1]. Animals treated with β-Caryophyllene display higher values of object recognition index than their vehicle-treated counterparts [t(14)=4.204, P<0.05]. The total time spent in object exploration during the test trial is not significantly different between β-Caryophyllene-treated and vehicle-treated animals (t(14)=0.5874, P>0.05). Treatment with β-Caryophyllene does not significantly alter these seizure-induced neurochemical changes^[3].</p> <p>MCE has not independently confirmed the accuracy of these methods. They are for reference only.</p>

PROTOCOL

Cell Assay ^[2]	<p>Panel of human cancer cells such as, pancreatic (PANC-1), colorectal (HCT-116 and HT-29), invasive squamous cell carcinoma (ME-180), leukemia (K562), hormone sensitive and invasive breast cancer cell line (MCF-7), and prostatic (PC3) adenocarcinoma cell lines are used. Cells are incubated in a humidified CO₂ incubator at 37°C supplied with 5% CO₂. Inhibitory effect of β-Caryophyllene on proliferation of the cell lines is tested using the MTT assay. The selectivity index (SI) for the cytotoxicity of β-Caryophyllene is calculated using the ratio of IC₅₀ of β-Caryophyllene on a normal cell line (NIH-3T3) to the IC₅₀ of β-Caryophyllene on cancer cell lines^[2].</p> <p>MCE has not independently confirmed the accuracy of these methods. They are for reference only.</p>
Animal Administration ^[1]	<p>Male double transgenic APP/PS1 mice and wild-type littermates are used. The mice are group housed (3 to 5 animals/cage) with a 12:12-hour light/dark cycle and ad libitum access to food and water. In this experiment, animals are orally treated by gavage with 16, 48, or 144 mg/kg of β-Caryophyllene every morning for 10 weeks starting at the age of 7 months. All vehicle solutions are used for the respective control animal treatments and the Morris water maze test is performed^[1].</p> <p>MCE has not independently confirmed the accuracy of these methods. They are for reference only.</p>

REFERENCES

- [1]. Cheng Y, et al. β -Caryophyllene ameliorates the Alzheimer-like phenotype in APP/PS1 Mice through CB2 receptor activation and the PPAR γ pathway. *Pharmacology*. 2014;94(1-2):1-12.
- [2]. Dahham SS, et al. The Anticancer, Antioxidant and Antimicrobial Properties of the Sesquiterpene β -Caryophyllene from the Essential Oil of *Aquilaria crassna*. *Molecules*.

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[3]. de Oliveira CC, et al. Anticonvulsant activity of β -caryophyllene against pentylenetetrazol-induced seizures. *Epilepsy Behav.* 2016 Mar;56:26-31.

Caution: Product has not been fully validated for medical applications. For research use only.

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