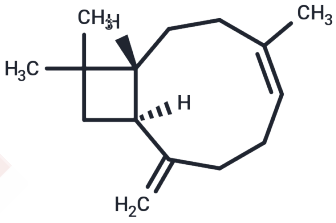
Data Sheet (Cat.No.T9114)

TargetMol

β-Caryophyllene

Chemical Properties



CAS No. : 87-44-5

Formula: C15H24

Molecular Weight: 204.35

Storage: Powder: -20°C for 3 years | In solvent: -80°C for 1 year
Actual storage temperature shall be subject to the COA.

Biological Description

Description	β-Caryophyllene ((-)-(E)-Caryophyllene) acts as an CB2 receptor agonist.
Targets(IC50)	Cannabinoid Receptor,Endogenous Metabolite
In vitro	β-Caryophyllene shows selective anti-proliferative effects against three tested cancer cell lines: HCT 116 (colon cancer, IC50=19 μM), PANC-1 (pancreatic cancer, IC50=27 μM), and HT29 (colon cancer, IC50=63 μM), but exhibits moderate or poor cytotoxicity against ME-180, PC3, K562, and MCF-7. It demonstrates higher selectivity for colorectal cancer cells, particularly HCT 116 (SI=27.9), followed by PANC-1 (SI=19.6) and HT 29 (SI=8). The apoptotic index for HCT 116 cells after 24 hours of β-Caryophyllene treatment is 64±0.04. At 10 μM, it causes significant nuclear condensation after 6 hours and exhibits dose- and time-dependent inhibitory effects on HCT 116 cell motility.
In vivo	During the examination period, administering varying doses of β-Caryophyllene had no impact on swimming speed. However, oral administration of β-Caryophyllene significantly reduced β-amyloid deposition in transgenic mice in a nearly dose-dependent manner, with the two highest doses showing comparable efficacy in decreasing β-amyloid accumulation. Notably, vehicle-treated mice displayed an increased number of activated astroglial cells compared to those treated with any dose of β-Caryophyllene. Furthermore, β-Caryophyllene effectively lowered the elevated COX-2 protein levels observed in vehicle-treated APP/PS1 mice. Additionally, animals receiving β-Caryophyllene treatment demonstrated a higher object recognition index than their vehicle-treated counterparts, indicating improved memory retention [t(14)=4. 204, P0.05]. There was no significant difference in the total time spent exploring objects between the β-Caryophyllene and vehicle-treated groups during the test trial (t(14)=0. 5874, P>0.05). β-Caryophyllene treatment did not significantly affect seizure-induced neurochemical alterations.
Cell Research	Stock solution (10 mM) of β-Caryophyllene is prepared using DMSO. Further, various concentrations (3 to 100 μM) of β-Caryophyllene are prepared by serially diluting the stock with respective culture medium.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

Cell Research	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. They are for reference only.
Animal Research	β-Caryophyllene is initially dissolved in dimethyl sulfoxide and further diluted (2%) in sterile phosphate-buffered saline (PBS) with 10% Cremophor EL (poluoxyl-35 hydrogenated castor oil).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. They are for reference only.

Solubility Information

Solubility	DMSO: 25 mg/mL (122.34 mM),Sonication is recommended. Ethanol: 176.67 mg/mL (864.55 mM),Sonication is recommended. H2O: < 0.1 mg/mL (insoluble), (< 1 mg/ml refers to the product slightly soluble or insoluble)
In vivo Formulation	10% DMSO+40% PEG300+5% Tween 80+45% Saline: 2 mg/mL (9.79 mM),Sonication is recommended. *Please add the solvents sequentially, clarifying the solution as much as possible before adding the next one. Dissolve by heating and/or sonication if necessary. Working solution is recommended to be prepared and used immediately. The formulation provided above is for reference purposes only. In vivo formulations may vary and should be modified based on specific experimental conditions.*

Preparing Stock Solutions

	1mg	5mg	10mg
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
50 mM	0.0979 mL	0.4894 mL	0.9787 mL

Please select the appropriate solvent to prepare the stock solution, according to the solubility of the product in different solvents. Please use it as soon as possible.

Note: The dilution table applies only to solid products. For liquid products, please calculate the stock solution based on the stated concentration and/or density.

Reference

Cheng Y, etal. β-Caryophyllene ameliorates the Alzheimer-like phenotype in APP/PS1 Mice through CB2 receptor activation and the PPARγ pathway. Pharmacology. 2014;94(1-2):1-12.
Li W, Qian P, Guo Y, et al. Myrtenal and β-caryophyllene oxide screened from Liquidambaris Fructus suppress NLRP3 inflammasome components in rheumatoid arthritis. BMC complementary medicine and therapies. 2021, 21 (1): 1-16.
Dahham SS, etal. The Anticancer, Antioxidant and Antimicrobial Properties of the Sesquiterpene β-Caryophyllenefrom the Essential Oil of Aquilaria crassna. Molecules. 2015 Jun 26;20(7):11808-29.
de Oliveira CC, etal. Anticonvulsant activity of β-caryophyllene against pentylenetetrazol-induced seizures. Epilepsy Behav. 2016 Mar;56:26-31.