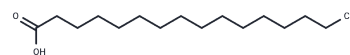


Palmitic acid

Chemical Properties

CAS No. :	57-10-3
Formula:	C16H32O2
Molecular Weight:	256.42
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	Palmitic acid (Cetylic acid) is a natural product, a common saturated fatty acid found in animals, plants and microorganisms. Palmitic acid has antitumor activity.
Targets(IC50)	HSP,Endogenous Metabolite
In vitro	<p>METHODS: Mouse microglia BV2 were treated with Palmitic acid (25-200 nM) for 6-48 h, and cell viability was measured by MTT.</p> <p>RESULTS: Palmitic acid had concentration- and time-dependent inhibitory effects on microglia viability. [1]</p> <p>METHODS: Monocyte-derived dendritic cells MoDC were treated with Palmitic acid (150 μM) for 12 h. The expression of DC co-stimulatory factors was measured by Flow Cytometry.</p> <p>RESULTS: Palmitic acid induced the expression of CD86 and CD83, indicating that the activation and maturation of MoDC were induced simultaneously. [2]</p>
In vivo	<p>METHODS: To investigate the effects on adverse biological behaviors in mice, Palmitic acid (0.3-30 μmol/mouse in castor oil) was administered as a single intraperitoneal injection to C57BL/6j mice, and biological behaviors were analyzed 2-24 h later.</p> <p>RESULTS: In a dose-dependent manner, Palmitic acid rapidly reduced locomotor activity in mice through a mechanism dependent on fatty acid chain length. 24 h after Palmitic acid administration, mice exhibited anxiety-like behaviors, whereas there was no impairment of locomotion, food intake, depression-like behaviors, or spatial memory. [3]</p> <p>METHODS: To investigate the effects on myocardial injury, Palmitic acid (5 mM in 500 μL solution) was injected intravenously into the tail of wild-type C57BL/6 (B6) and Md2-/- (KO) mice once a day for seven days.</p> <p>RESULTS: Palmitic acid induced myocardial inflammatory injury via TLR4 accessory protein MD2 and protected Md2 knockout mice from myocardial injury induced by Palmitic acid and high-fat diet. [4]</p>
Kinase Assay	As sources of PLA2, human recombinant sPLA2 (type IIA) is purified from CHO cells transfected with the PLA2 gene and rabbit recombinant platelet cPLA2 is obtained through its expression in baculovirus. The standard reaction mixture (200 μL) contained 100 mM Tris-HCl buffer (pH 9.0) with 6 mM CaCl2 and 20 nmol 1-acyl-[1-14C]-arachidonyl-sn-glycerophosphoethanolamine (2000 cpm/nmol) in the presence or absence of Tanshinone I. The reaction is started by adding 50 ng purified sPLA2 or

Kinase Assay	cPLA2. After 20 min at 37°C, the free fatty acid generated is analysed. Under these standard conditions, the reaction mixture in the absence of Tanshinone I released approximately 10% of free fatty acid from the phospholipid substrate added[1].
Cell Research	<p>Cell Experiment Solubilisation Formula:</p> <ol style="list-style-type: none"> 1. Dissolve 1 mg of palmitic acid in 78 µL of anhydrous ethanol to obtain a 50 mM stock solution; if a higher concentration is required, dissolve 1 mg of palmitic acid in 39 µL of anhydrous ethanol to obtain a 100 mM stock solution. 2. Prepare a 10% BSA solution using culture medium (e.g., DMEM); BSA without fatty acids is preferable, with a concentration of 100 mg/mL. 3. For the solvent control group, prepare ethanol and BSA control solutions at the corresponding concentrations without lipids. 4. As an example of preparing 1 mL of a 0.25 mM working solution, mix 5 µL of 50 mM palmitic acid stock solution + 100 µL of 10% BSA solution + 895 µL of culture medium. The final solution will contain 1% BSA. The ethanol concentration should be controlled between 0.1%~0.5%. 5. Filter the working solution using a sterile filter membrane for use in cell processing.

Solubility Information

Solubility	DMSO: 100 mg/mL (389.99 mM),Sonication is recommended. Ethanol: 40.83 mg/mL (159.23 mM),Sonication is recommended. (< 1 mg/ml refers to the product slightly soluble or insoluble)
In vivo Formulation	10% DMSO+40% PEG300+5% Tween 80+45% Saline: 0.26 mg/mL (1.01 mM),Solution. <i>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.</i>

Preparing Stock Solutions

	1mg	5mg	10mg
1 mM	3.8999 mL	19.4993 mL	38.9985 mL
5 mM	0.780 mL	3.8999 mL	7.7997 mL
10 mM	0.390 mL	1.9499 mL	3.8999 mL
50 mM	0.078 mL	0.390 mL	0.780 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

- Urso CJ, et al. Palmitic Acid Lipotoxicity in Microglia Cells Is Ameliorated by Unsaturated Fatty Acids. *Int J Mol Sci*. 2021 Aug 23;22(16):9093.
- Fu C N, Wei H, Gao W S, et al. Obesity increases neuropathic pain via the AMPK-ERK-NOX4 pathway in rats. *Aging (Albany NY)*. 2021, 13(14): 18606.
- Nicholas DA, et al. Palmitic acid is a toll-like receptor 4 ligand that induces human dendritic cell secretion of IL-1 β . *PLoS One*. 2017 May 2;12(5):e0176793.
- Fang X X, Wei P, Zhao K, et al. Fatty acid-binding proteins 3, 7, and 8 bind cholesterol and facilitate its egress from lysosomes. *Journal of Cell Biology*. 2024, 223(4).
- Moon ML, et al. The saturated fatty acid, palmitic acid, induces anxiety-like behavior in mice. *Metabolism*. 2014 Sep;63(9):1131-40.
- Wu Z K, Li H Y, Zhu Y L, et al. Neuroprotective and anti-inflammatory effects of eicosane on glutamate and NMDA-induced retinal ganglion cell injury. *International Journal of Ophthalmology*. 2024, 17(4): 638.
- Wu D, Xu J, Zhang Y, et al. tBHQ mitigates fatty liver ischemia-reperfusion injury by activating Nrf2 to attenuate hepatocyte mitochondrial damage and macrophage STING activation. *International Immunopharmacology*. 2024, 138: 112515.
- Wang Y, et al. Saturated palmitic acid induces myocardial inflammatory injuries through direct binding to TLR4 accessory protein MD2. *Nat Commun*. 2017 Jan 3;8:13997.
- Cheng M, Yan X, Wu Y, et al. Qingke Pingchuan granules alleviate airway inflammation in COPD exacerbation by inhibiting neutrophil extracellular traps in mice. *Phytomedicine*. 2024: 156283.
- Lin H Y H, Chen I Y, Wang T M, et al. Role of Mitochondrial AKT1 Signaling in Renal Tubular Injury of Metabolic Syndrome. *Kidney International Reports*. 2024
- The Role of Mitochondrial AKT1 Signaling in Renal Tubular Injury of Metabolic Syndrome

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