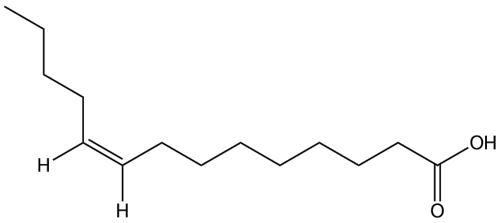
Product Data Sheet

Product Name: Myristoleic Acid
Cat. No.: GC11087

Chemical Properties

Cas. No.	544-64-9		
SMILES	OC(CCCCCCC/C=C\CCCC)=O		
Formula	$C_{14}H_{26}O_2$	M.Wt	226.4
Solubility	DMF: 3 mg/ml,DMSO: 2.5 mg/ml,Ethanol: miscible,PBS (pH 7.2): 2 mg/ml	Storage	Store at -20°C
General tips	For obtaining a higher solubility , please warm the tube at 37 °C and shake it in the ultrasonic bath for a while.Stock solution can be stored below -20°C for several months.		
Shipping Condition	Evaluation sample solution : ship with blue ice All other available size: ship with RT , or blue ice upon request.		

Structure



Protocol

Animal experiment [1]:

Animal models C57BL/6 mice

Product Data Sheet

Preparation Method	C57BL/6 mice at 5 weeks of age were divided into 4 groups. The control group was treated with PBS every 24h for 4 days and the other groups received intraperitoneal injections of 1mg/kg soluble RANKL (sRANKL) every 24h for 4 days. 12h after the injection of sRANKL, each of two groups received 0.2mg/kg Myristoleic acid or 2mg/kg Myristoleic acid every 24h for 4 days. All mice were killed at day 4. The left femurs were analyzed by micro-computed tomography (μCT) using a SMX-90CT system (90kVp, 109mA, and 180-ms integration time). The right femurs were fixed in 4% paraformaldehyde and decalcified in 12% EDTA for 5 weeks. Decalcified femurs were dehydrated with 70% to 100% ethanol and embedded in paraffin. Histological samples sectioned to 5μm thickness were stained for TRAP or with hematoxylin and eosin (H&E). Analysis of bone histomorphometric parameters was performed by using the Osteomeasure program.
Dosage form	0.2, 2mg/kg/day; 4 days; i.p.
Applications	Co-administration of Myristoleic acid suppressed generation of TRAP-positive osteoclasts induced by sRANKL and attenuated the increases in osteoclastic indices of osteoclast surface per bone surface (OC.S/BS), osteoclasts per bone perimeter (N.OC/B.Pm) and eroded surface per bone surface (ES/BS) in a dose-dependent manner.

References:

[1] Kwon J O, Jin W J, Kim B, et al. Myristoleic acid inhibits osteoclast formation and bone resorption by suppressing the RANKL activation of Src and Pyk2[J]. European journal of pharmacology, 2015, 768: 189-198.

Background

Myristoleic acid is a biologically active unsaturated fatty acid that can be extracted from the seeds of

plants of the Myristicaceae family or biosynthesized from myristic acid by desaturase in vivo[1, 2]. Myristoleic acid has cytotoxic effects and can induce apoptosis and necrosis of human prostate cells[3, 4]. Myristoleic acid can inhibit the biofilm formation of Propionibacterium acnes and the mixed biofilm formation of Propionibacterium acnes and Staphylococcus aureus, and regulate the expression of several biofilm-related genes, such as lipase, hyaluronan lyase, and virulence-related genes[5].

In vivo, Myristoleic acid (0.2, 2mg/kg) treated C57BL/6 mice by intraperitoneal injection for 4 days inhibited the formation of TRAP-positive osteoclasts induced by sRANKL and attenuated the increase in osteoclast surface per bone surface (OC.S/BS), osteoclasts per bone perimeter (OC/B.Pm), and eroded surface per bone surface (ES/BS) in a dose-dependent manner[6].

References:
[1] Gao B, Yu L. Bioactive Fatty Acids[J]. 2025.
[2] Liu Y, Shen N, Xin H, et al. Unsaturated fatty acids in natural edible resources, a systematic review of classification, resources, biosynthesis, biological activities and application[J]. Food Bioscience, 2023, 53: 102790.
[3] Zhou Y, Xu J, MacIsaac H J, et al. Comparative metabolomic analysis of exudates of microcystin-producing and microcystin-free Microcystis aeruginosa strains[J]. Frontiers in Microbiology, 2023, 13: 1075621.
[4] Iguchi K, Okumura N, Usui S, et al. Myristoleic acid, a cytotoxic component in the extract from Serenoa repens, induces apoptosis and necrosis in human prostatic LNCaP cells[J]. The prostate, 2001, 47(1): 59-65.
[5] Kim Y G, Lee J H, Lee J. Antibiofilm activities of fatty acids including myristoleic acid against Cutibacterium acnes via reduced cell hydrophobicity[J]. Phytomedicine, 2021, 91: 153710.
[6] Kwon J O, Jin W J, Kim B, et al. Myristoleic acid inhibits osteoclast formation and bone resorption by suppressing the RANKL activation of Src and Pyk2[J]. European journal of pharmacology, 2015, 768: 189-198.