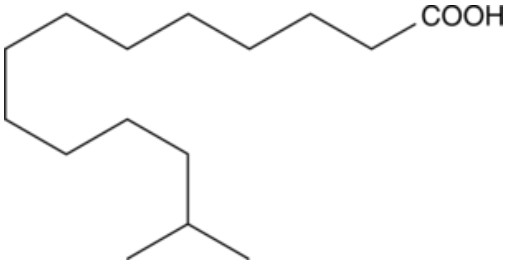
Product Data Sheet

Product Name: 13-methyl Myristic Acid
Cat. No.: GC41366

Chemical Properties

Cas. No.	2485-71-4		
SMILES	CC(C)CCCCCCCCCCCC(O)=O		
Formula	C15H30O2	M.Wt	242.4
Solubility	Chloroform: Soluble,Ethanol: Soluble,Ether: Soluble	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

Cell experiment [1]:

Cell lines	T24, 5637, and UM-UC-3 cells (human bladder cancer cells)
Preparation Method	Test samples of fatty acids were dissolved in phosphate buffered saline (PBS) containing 0.8% Tween 80. Serial dilutions of 0, 35, 70, 105, and 140μg/ml 13-methyl Myristic Acid were used. Cells were seeded in a 96-well microplate with $1x10^4$ cells/well, and divided into control and treatment groups. The control groups contained the same volume of solvent but no 13-methyl Myristic Acid. After 12 and 24 hours, the viable cell numbers were determined by MTT assay.

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Reaction Conditions	0, 35, 70, 105, and 140μg/ml; 12 or 24h
Applications	Inhibition of cell viability by 13-methyl Myristic Acid happened in a dose- and time-dependent manner. Reduction in cell viability with 13-methyl Myristic Acid treatment at concentrations of 35-140μg/ml after 12 hours ranged from 10% to 85%; after 24 hours, cell viability reduction ranged from 25% to 97%.

Animal experiment [2]:

Animal models	BALB/C nude mice subcutaneously injected with Jurkat lymphoma or EL4 cells
Preparation Method	When the tumor size was about 5mm (5 days after implantation), the mice were divided into two groups: the treatment group was treated with 13-methyl Myristic Acid 70mg/kg/day for 15 days orally by gavage in EL4 cell xenografts, and 30 days in Jurkat cell xenografts; the control group was administered the same volume of the solvent solution (Tween 80). After treatment, the tumor formation rate was calculated.
Dosage form	70mg/kg/d; 15 or 30d; p.o.
Applications	The mean tumor volume and weight in nude mice receiving 13-methyl Myristic Acid treatment were significantly lower than in the control group.

References:

[1] Lin T, Yin X, Cai Q, et al. 13-Methyltetradecanoic acid induces mitochondrial-mediated apoptosis in human bladder cancer cells. Urol Oncol. 2012;30(3):339-345.
[2] Cai Q, Huang H, Qian D, et al. 13-methyltetradecanoic acid exhibits anti-tumor activity on T-cell lymphomas in vitro and in vivo by down-regulating p-AKT and activating caspase-3. PLoS One. 2013;8(6):e65308.

Background

Product Data Sheet

13-methyl Myristic Acid(13-MTD) is a saturated branched fatty acid purified from soybean fermentation products. 13-methyl Myristic Acid can induce apoptosis in various human cancer cells, including leukemia K562, breast cancer MCF7, prostate cancer DU145, lung small cell carcinoma NCI-H1688, pancreatic adenocarcinoma BxPC3, liver carcinoma SNU-423, gastric carcinoma NCI-SNU-1, and colon carcinoma HCT116. 13-methyl Myristic Acid has the potential to be a broad-spectrum, high-performance anti-tumor drug with low side effects[1].

In vitro, 13-methyl Myristic Acid treatment for 48h resulted in IC_{50} values of 25.74±3.50μg/mL, 31.29±2.27μg/mL, and 31.53±5.18μg/mL in T-NHL cell lines (Jurkat, Hut78, and EL4), respectively[2]. Treatment of human bladder cancer cells (T24, 5637, and UM-UC-3) with 13-methyl Myristic Acid (35–140μg/mL) inhibited cell proliferation in a dose-dependent manner, with reductions in cell viability ranging from 10% to 85% after 12h and from 25% to 97% after 24h. Treatment with 70μg/mL 13-methyl Myristic Acid induced apoptosis in bladder cancer cell lines in a time-dependent manner over 2-48h, characterized by decreased Bcl-2 expression, increased Bax expression, reduced AKT phosphorylation, and activation of p38 and JNK phosphorylation[1].

In vivo, treatment with 13-methyl Myristic Acid (70mg/kg/day) significantly inhibited tumor growth in BALB/C nude mice subcutaneously injected with Jurkat lymphoma cells after 30 days of treatment and in those injected with EL4 cells after 15 days[2].

References:
[1] Lin T, Yin X, Cai Q, et al. 13-Methyltetradecanoic acid induces mitochondrial-mediated apoptosis in human bladder cancer cells. Urol Oncol. 2012;30(3):339-345.
[2] Cai Q, Huang H, Qian D, et al. 13-methyltetradecanoic acid exhibits anti-tumor activity on T-cell lymphomas in vitro and in vivo by down-regulating p-AKT and activating caspase-3. PLoS One. 2013;8(6):e65308.

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