

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

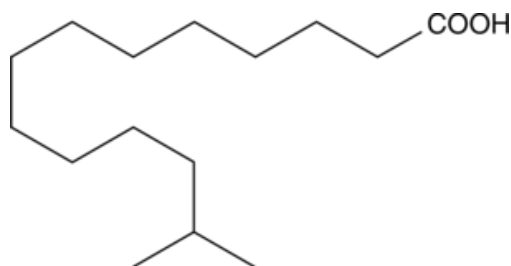
Solubility Chloroform: Soluble, Ethanol: Soluble, Ether: Soluble

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 140 µg/ml 13-methyl Myristic Acid were used. Cells were seeded in a 96-well microplate with 1×10^4 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.

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

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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

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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 IC₅₀ 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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