

Product Data Sheet

Product Name: Oleanolic acid

Cat. No.: GN10184

Chemical Properties

Cas. No. 508-02-1

Chemical Name (4aS,6aR,6aS,6bR,8aR,10S,12aR,14bS)-10-hydroxy-2,2,6a,6b,9,9,12a-heptamethyl-1,3,4,5,6,6a,7,8,8a,10,11,12,13,14b-tetradecahydronicene-4a-carboxylic acid

SMILES CC1(CCC2(CCC3(C(=CCC4C3(CCC5C4(CCC(C5(C)C)O)C)C)C2C1)C)C(=O)O)C

Formula $C_{30}H_{48}O_3$

M.Wt 456.71

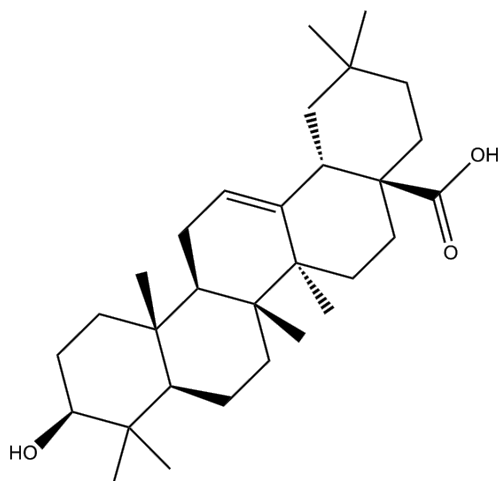
Solubility $\geq 16.6\text{mg/mL}$ in DMSO, ultrasonic solubilization

Storage Store at 2-8°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]:

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Cell lines	PLC cells (Peritoneal lymphocytes (PLC-PRF-5))
Preparation method	PLC cells (5×10^3 cells/mL) were seeded in 96-well culture plates and incubated for 20 hours. Following this, the cells were treated with either solvent alone, oleanolic acid (at concentrations of 50 μ M, 65 μ M, and 80 μ M), regorafenib, or a combination of oleanolic acid and regorafenib. The cells were then incubated for either 24 hours or 48 hours.
Reaction Conditions	50, 65, and 80 μ M;24/48h
Applications	Oleanolic acid at doses of 65 μ M or 80 μ M enhanced the efficacy of regorafenib in suppressing the growth of PLC cells.
Animal experiment [1]:	
Animal models	6-8week male BAIB/c nu/nu mice
Preparation method	1×10^6 PLC cells, suspended in PBS, were subcutaneously injected for inoculation into mice, who were then randomly divided into four groups. Two weeks post-inoculation, the experimental groups were orally administered oleanolic acid (50 mg/kg daily), regorafenib (10 mg/kg daily), or a combination of oleanolic acid (50 mg/kg daily) and regorafenib (10 mg/kg daily) for an additional 2 weeks. The control group received an equivalent volume of saline for the same duration.

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Dosage form	50 mg/kg/d; i.g; 2weeks
Applications	Oleanolic acid treatment significantly inhibited the tumor growth. It can enhance the antitumor effect of regorafenib.
References: [1].Wang H, Zhong W, et.al. Oleanolic Acid Inhibits Epithelial-Mesenchymal Transition of Hepatocellular Carcinoma by Promoting iNOS Dimerization. Mol Cancer Ther. 2019 Jan;18(1):62-74. doi: 10.1158/1535-7163.MCT-18-0448. Epub 2018 Oct 8. PMID: 30297361.	

Background

Oleanolic acid is a natural pentacyclic triterpenoid known for its effectiveness in treating hepatitis. Additionally, it demonstrates antitumor effects across various types of cancers [1-3].

Oleanolic acid, at concentrations of 50 μ M, 65 μ M, and 80 μ M, when administered for 24 or 48 hours, enhanced the ability of regorafenib to suppress the growth of PLC cells, particularly at doses of 65 μ M or 80 μ M^[4]. Oleanolic acid, at concentrations of 2 μ M, 4 μ M, and 8 μ M administered over 48 hours, acts as an activator of Nrf2. It exhibits a dose-dependent attenuation of TGF- β 1-induced epithelial-mesenchymal transition (EMT) in NRK-52E cells [5]. Furthermore, oleanolic acid at a concentration of 50 μ M, when applied for 6 hours, induces prostacyclin release in human coronary smooth muscle cells (SMC) through a Cox-2-dependent mechanism[6].

Oleanolic acid(50 mg/kg/d; i.g; 2weeks) exerts anti-EMT effect *in vivo* and enhances the antitumor effect of regorafenib^[4]. Oleanolic acid(10-100 mg/kg; ip) demonstrated significant anti-epileptogenic potential in pentylenetetrazole-induced seizures^[7].

References:

[1]. Pollier J, Goossens A. Oleanolic acid. Phytochemistry. 2012 May;77:10-5. doi: 10.1016/j.phytochem.2011.12.022. Epub 2012 Feb 28. PMID: 22377690.

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- [2]. Ma W, Wang DD, et.al. Caveolin-1 plays a key role in the oleanolic acid-induced apoptosis of HL-60 cells. *Oncol Rep.* 2014 Jul;32(1):293-301. doi: 10.3892/or.2014.3177. Epub 2014 May 15. PMID: 24842472.
- [3]. Žiberna L, Šamec D, et.al. Oleanolic Acid Alters Multiple Cell Signaling Pathways: Implication in Cancer Prevention and Therapy. *Int J Mol Sci.* 2017 Mar 16;18(3):643. doi: 10.3390/ijms18030643. PMID: 28300756; PMCID: PMC5372655.
- [4]. Wang H, Zhong W, et.al. Oleanolic Acid Inhibits Epithelial-Mesenchymal Transition of Hepatocellular Carcinoma by Promoting iNOS Dimerization. *Mol Cancer Ther.* 2019 Jan;18(1):62-74. doi: 10.1158/1535-7163.MCT-18-0448. Epub 2018 Oct 8. PMID: 30297361.
- [5]. He WM, Yin JQ, et.al. Oleanolic acid attenuates TGF- β 1-induced epithelial-mesenchymal transition in NRK-52E cells. *BMC Complement Altern Med.* 2018 Jul 4;18(1):205. doi: 10.1186/s12906-018-2265-y. PMID: 29973206; PMCID: PMC6031099.
- [6]. Martínez-González J, Rodríguez-Rodríguez R, et.al. Oleanolic acid induces prostacyclin release in human vascular smooth muscle cells through a cyclooxygenase-2-dependent mechanism. *J Nutr.* 2008 Mar;138(3):443-8. doi: 10.1093/jn/138.3.443. PMID: 18287347.
- [7]. Akünel Türel C, Yunusoğlu O. Oleanolic acid suppresses pentylenetetrazole-induced seizure in vivo. *Int J Environ Health Res.* 2023 May;33(5):529-540. doi: 10.1080/09603123.2023.2167947. Epub 2023 Feb 22. PMID: 36812380.

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