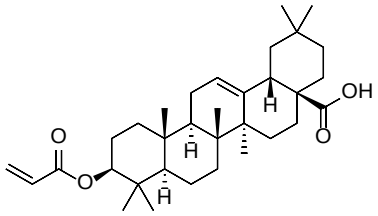
Product data sheet

MedKoo Cat#: 574047 Name: Oleanolic acid acrylate CAS: 1975976-24-9 Chemical Formula: $C_{33}H_{50}O_4$ Exact Mass: 510.3709 Molecular Weight: 510.759	
Product supplied as:	Powder
Purity (by HPLC):	≥ 98%
Shipping conditions	Ambient temperature
Storage conditions:	Powder: -20°C 3 years; 4°C 2 years.
	In solvent: -80°C 3 months; -20°C 2 weeks.

1. Product description:
Oleanolic acid acrylate (OAA) is an agonist of the serotonin (5-HT) receptor subtype 5-HT1A and a derivative of oleanolic acid. It is also a selective inhibitor of MAO-A with anti-depressant-like and anxiolytic activities.

2. CoA, QC data, SDS, and handling instruction
SDS and handling instruction, CoA with copies of QC data (NMR, HPLC and MS analytical spectra) can be downloaded from the product web page under "QC And Documents" section. Note: copies of analytical spectra may not be available if the product is being supplied by MedKoo partners. Whether the product was made by MedKoo or provided by its partners, the quality is 100% guaranteed.

3. Solubility data

Solvent	Max Conc. mg/mL	Max Conc. mM
DMF	30.0	58.74
DMSO	20.0	39.16
Ethanol	30.0	58.74
Ethanol:PBS (pH 7.2) (1:40)	0.02	0.04

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	1.96 mL	9.79 mL	19.58 mL
5 mM	0.39 mL	1.96 mL	3.92 mL
10 mM	0.20 mL	0.98 mL	1.96 mL
50 mM	0.04 mL	0.20 mL	0.39 mL

5. Molarity Calculator, Reconstitution Calculator, Dilution Calculator
Please refer the product web page under section of "Calculator"

6. Recommended literature which reported protocols for in vitro and in vivo study
In vitro study

1. Kim YY, Lee S, Kim MJ, Rho MC, Jang YH, Kim SH. Oleanolic Acid Acetate Inhibits Mast Cell Activation in Ovalbumin-Induced Allergic Airway Inflammation. Allergy Asthma Immunol Res. 2023 Mar;15(2):214-230. doi: 10.4168/aair.2023.15.2.214. PMID: 37021507; PMCID: PMC10079514.
2. Luo Y, Wang D, Yuan X, Jin Z, Pi L. Oleanolic acid regulates the proliferation and extracellular matrix of keloid fibroblasts by mediating the TGF-β1/SMAD signaling pathway. J Cosmet Dermatol. 2023 Feb 27. doi: 10.1111/jocd.15673. Epub ahead of print. PMID: 36847714.

In vivo study

1. Zhang B, Zhang W, Luo J, He J, Zheng X, Zhu S, Rong B, Ai Y, Zhang L, He T. Effects of oleanolic acid on hair growth in mouse dorsal skin mediated via regulation of inflammatory cytokines. J Appl Biomed. 2023 Apr;21(1):48-57. doi: 10.32725/jab.2023.003. Epub 2023 Mar 27. PMID: 37016778.
2. Yao L, Wang M, Zhang J, Luo X, Yuan C, Bai R, Wang T, Xi Y, Li C, Ke D, Yamahara J, Li Y, Yi Y, Wang S, Wang J. Oleanolic Acid Inhibits SCD1 Gene Expression to Ameliorate Fructose-Induced Hepatosteatosis through SREBP1c-Dependent and -

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Independent Mechanisms. Mol Nutr Food Res. 2023 Mar 27:e2200533. doi: 10.1002/mnfr.202200533. Epub ahead of print. PMID: 36972071.

7. Bioactivity

Biological target:

Oleanolic acid acrylate (OAA) is an agonist of the serotonin (5-HT) receptor subtype 5-HT1A and a derivative of oleanolic acid.

In vitro activity

OAA (oleanic acid acetate) reduced OVA-induced airway inflammatory responses such as bronchospasm, increase of immune cell infiltration and serum immunoglobulin E and G1 levels. Especially, OAA decreased the mast cell infiltration, and β-hexosaminidase release as a mast cell activation marker in the bronchoalveolar lavage fluid. OAA inhibited mast cell degranulation in mast cell line (RBL-2H3) and primary cells (rat peritoneal mast cell and mouse bone marrow-derived mast cell). Mechanistically, OAA suppressed intracellular signaling pathways including the phosphorylation of phospholipase Cγ and nuclear factor-κB, resulting from the suppression of intracellular calcium influx and pro-inflammatory cytokine expression.

Reference: Allergy Asthma Immunol Res. 2023 Mar;15(2):214-230. https://pubmed.ncbi.nlm.nih.gov/37021507/

In vivo activity

Rats treated with 10% w/v fructose solution were co-administered by OA (oleanolic acid) for 5 weeks, and then sacrificed after fasting for 14 h. OA reversed the fructose-induced increase in hepatic triglyceride (TG) content and downregulated Scd1 mRNA expression. In vivo and in vitro studies using SREBP1c$^{-/-}$ mice and HepG2 cell models showed that OA also inhibited SCD1 gene overexpression and high hepatic TG levels induced by fructose. On the other hand, in SCD1$^{-/-}$ mice, when the fructose diet was supplemented with high levels of oleic acid (OLA) to compensate for the deficiency of SCD1, OA inhibited hepatic SREBP1c and lipogenic gene expression and reduced hepatic OLA (C18:1) production to improve fructose and/or OLA induced liver lipid deposition. Furthermore, OA promoted PPARα and AMPK to enhance fatty acid oxidation in fructose + OLA-fed SCD1$^{-/-}$ mice.

Reference: Mol Nutr Food Res. 2023 Mar 27:e2200533. https://pubmed.ncbi.nlm.nih.gov/36972071/