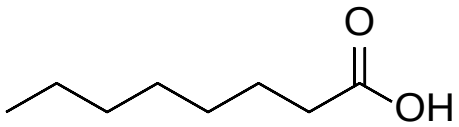
Product data sheet

MedKoo Cat#: 558644 Name: Octanoic acid CAS: 124-07-2 Chemical Formula: $C_8H_{16}O_2$ Exact Mass: 144.115 Molecular Weight: 144.214	
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:
Octanoic acid is an antimicrobial pesticide used as a food contact surface sanitizer.

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
DMSO	100.0	693.41

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	6.93 mL	34.67 mL	69.34 mL
5 mM	1.39 mL	6.93 mL	13.87 mL
10 mM	0.69 mL	3.47 mL	6.93 mL
50 mM	0.14 mL	0.69 mL	1.39 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. Leem J, Shim HM, Cho H, Park JH. Octanoic acid potentiates glucose-stimulated insulin secretion and expression of glucokinase through the olfactory receptor in pancreatic β-cells. Biochem Biophys Res Commun. 2018 Sep 3;503(1):278-284. doi: 10.1016/j.bbrc.2018.06.015. Epub 2018 Jun 11. PMID: 29885841.

2. Kadota Y, Toyoda T, Hayashi-Kato M, Kitaura Y, Shimomura Y. Octanoic acid promotes branched-chain amino acid catabolisms via the inhibition of hepatic branched-chain alpha-keto acid dehydrogenase kinase in rats. Metabolism. 2015 Sep;64(9):1157-64. doi: 10.1016/j.metabol.2015.05.014. Epub 2015 Jun 3. PMID: 26104959.

In vivo study

1. Yang J, Wang P, Jiang X, Xu J, Zhang M, Liu F, Lin Y, Tao J, He J, Zhou X, Zhang M. A Nanotherapy of Octanoic Acid Ameliorates Cardiac Arrest/Cardiopulmonary Resuscitation-Induced Brain Injury via RVG29- and Neutrophil Membrane-Mediated Injury Relay Targeting. ACS Nano. 2023 Feb 28;17(4):3528-3548. doi: 10.1021/acsnano.2c09931. Epub 2023 Feb 9. PMID: 36758159.

2. Charlot A, Morel L, Bringolf A, Georg I, Charles AL, Goupilleau F, Geny B, Zoll J. Octanoic Acid-Enrichment Diet Improves Endurance Capacity and Reprograms Mitochondrial Biogenesis in Skeletal Muscle of Mice. Nutrients. 2022 Jun 29;14(13):2721. doi: 10.3390/nu14132721. PMID: 35807901; PMCID: PMC9268503.

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7. Bioactivity

Biological target:

Octanoic acid (Caprylic acid) is an oily liquid with a slightly unpleasant rancid taste and used commercially in the production of esters used in perfumery and also in the manufacture of dyes.

In vitro activity

The OA (octanoic acid)-induced enhancement of GSIS was inhibited by Olfr15 knockdown. Treatment with a PLC inhibitor or an Ins(1,4,5)P3 receptor (IP3R) antagonist also blocked the OA-induced enhancement of GSIS. These results suggest that OA potentiates GSIS via Olfr15 though the PLC-IP3 pathway. Furthermore, long-term treatment with OA increased cellular glucose uptake in MIN6 cells by up-regulating the expression of glucokinase (GK).

Reference: Biochem Biophys Res Commun. 2018 Sep 3;503(1):278-284. https://pubmed.ncbi.nlm.nih.gov/29885841/

In vivo activity

Herein, based on previous research, an OA (octanoic acid)-based nanotherapy coated with a neutrophil membrane highly expressing RVG29, RVG29-H-NPOA, was successfully constructed by computer simulation-guided supramolecular assembly of polyethylenimine and OA. The in vitro and in vivo experiments showed that RVG29-H-NPOA could target and be distributed in the injured brain focus via the relay-targeted delivery mediated by RVG29-induced blood-brain barrier (BBB) penetration and neutrophil membrane protein-induced BBB binding and injury targeting. This results in enhancements of the antioxidant, antiapoptotic, mitochondrial stability-promoting and anti-inflammatory effects of OA and exhibited systematic alleviation of astrocyte injury, neuronal damage, and inflammatory response in the brain. Due to their systematic intervention in multiple pathological processes, RVG29-H-NPOA significantly increased the 24 h survival rate of CA/CPR model rats from 40% to 100% and significantly improved their neurological functions.

Reference: ACS Nano. 2023 Feb 28;17(4):3528-3548. https://pubmed.ncbi.nlm.nih.gov/36758159/