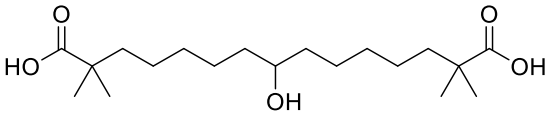
Product data sheet

MedKoo Cat#: 319651 Name: Bempedoic acid CAS#: 738606-46-7 Chemical Formula: $C_{19}H_{36}O_5$ Exact Mass: 344.2563 Molecular Weight: 344.492	
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:
Bempedoic acid, also known as ESP-55016 and ETC-1002, is an orally available, once-daily LDL-C lowering small molecule designed to lower elevated levels of LDL-C and to avoid side effects associated with existing LDL-C lowering therapies. Bempedoic acid is absorbed rapidly in the small intestine and enters the liver through cell surface receptors different from those transporters that selectively take up statins. Bempedoic acid is a regulator of lipid and carbohydrate metabolism.

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	68	197.39

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	2.90 mL	14.51 mL	29.03 mL
5 mM	0.58 mL	2.90 mL	5.81 mL
10 mM	0.29 mL	1.45 mL	2.90 mL
50 mM	0.06 mL	0.29 mL	0.58 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. Filippov S, Pinkosky SL, Lister RJ, Pawloski C, Hanselman JC, Cramer CT, Srivastava RAK, Hurley TR, Bradshaw CD, Spahr MA, Newton RS. ETC-1002 regulates immune response, leukocyte homing, and adipose tissue inflammation via LKB1-dependent activation of macrophage AMPK. J Lipid Res. 2013 Aug;54(8):2095-2108. doi: 10.1194/jlr.M035212. Epub 2013 May 24. PMID: 23709692; PMCID: PMC3708360.

2. Pinkosky SL, Filippov S, Srivastava RA, Hanselman JC, Bradshaw CD, Hurley TR, Cramer CT, Spahr MA, Brant AF, Houghton JL, Baker C, Naples M, Adeli K, Newton RS. AMP-activated protein kinase and ATP-citrate lyase are two distinct molecular targets for ETC-1002, a novel small molecule regulator of lipid and carbohydrate metabolism. J Lipid Res. 2013 Jan;54(1):134-51. doi: 10.1194/jlr.M030528. Epub 2012 Nov 1. PMID: 23118444; PMCID: PMC3520520.

In vivo study

1. Filippov S, Pinkosky SL, Lister RJ, Pawloski C, Hanselman JC, Cramer CT, Srivastava RAK, Hurley TR, Bradshaw CD, Spahr MA, Newton RS. ETC-1002 regulates immune response, leukocyte homing, and adipose tissue inflammation via LKB1-dependent activation of macrophage AMPK. J Lipid Res. 2013 Aug;54(8):2095-2108. doi: 10.1194/jlr.M035212. Epub 2013 May 24. PMID: 23709692; PMCID: PMC3708360.

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2. Pinkosky SL, Filippov S, Srivastava RA, Hanselman JC, Bradshaw CD, Hurley TR, Cramer CT, Spahr MA, Brant AF, Houghton JL, Baker C, Naples M, Adeli K, Newton RS. AMP-activated protein kinase and ATP-citrate lyase are two distinct molecular targets for ETC-1002, a novel small molecule regulator of lipid and carbohydrate metabolism. J Lipid Res. 2013 Jan;54(1):134-51. doi: 10.1194/jlr.M030528. Epub 2012 Nov 1. PMID: 23118444; PMCID: PMC3520520.

7. Bioactivity

Biological target:

Bempedoic acid (ETC-1002) is an ATP-citrate lyase (ACL) inhibitor and also serves to activate AMPK.

In vitro activity

In human hepatocellular carcinoma (HepG2) cells treated with bempedoic acid (ETC-1002), profound and concentration-dependent activation of AMPK has been previously attributed to ETC-1002-free acid as, similar to primary human MDMs, these cells do not metabolize parent molecules to ETC-1002-CoA thioester. To determine whether ETC-1002 activates AMPK in human macrophages, MDMs differentiated in autologous serum were treated with various concentrations of the compound, and cell lysates were probed with anti-phosphorylated AMPKα (T172) antibody. In vehicle-treated MDMs, basal levels of AMPK phosphorylation were readily detectible as demonstrated by the appearance of an immunoreactive band corresponding to the expected molecular mass of ~62 kDa (Fig. 1B). Concentration-dependent increases in phospho-AMPK-to-total-AMPK ratio in ETC-1002-treated cells indicate that ETC-1002 induces AMPK (T172) phosphorylation at levels comparable to those observed previously in HepG2 cells. ACC (serine 79) is a unique AMPK phosphorylation site and is commonly used as a marker of AMPK activity. As such, when cell lysates from MDMs treated with ETC-1002 were probed with anti-phosphorylated ACC (S79) antibodies, sustained and concentration-dependent increases in ACC (S79)-specific immunoreactivity were observed at the expected molecular mass of ~280 kDa. Consistently, the phospho-ACC to total-ACC ratio increased by 25% and 60% in cells treated with 50 μM and 100 μM ETC-1002, respectively (Fig. 1B). Taken together, these data confirm the AMPK-activating properties of ETC-1002 in primary human MDMs (Fig. 1B).

Reference: J Lipid Res. 2013 Aug;54(8):2095-2108. https://www.ncbi.nlm.nih.gov/pmc/articles/pmid/23709692/

In vivo activity

In a mouse model of DIO, a two-week treatment with ETC-1002 was sufficient to reduce body weight as well as to lower fasting plasma glucose and insulin levels. Since adipose tissue macrophages are believed to play a critical role in governing immune responses and insulin resistance in DIO, it was next evaluated whether the beneficial effect of ETC-1002 on glycemic control can be linked to reduced levels of adipose tissue-associated inflammation. As such, male C57BL/6 mice were placed on HFD and orally dosed with either vehicle alone or ETC-1002 at 30 mg/kg/day for nine weeks. At the termination of the study, visceral adipose tissue from mice placed on HFD was macroscopically larger (Fig. 8A), with the average epididymal fat pad mass significantly increased relative to chow-fed animals (0.31 ± 0.04 g, chow-fed versus 1.3 ± 0.04 g, HFD-fed; $P < 0.05$) (Fig. 7A). By contrast, ETC-1002-treated mice displayed a 32% reduction in fat-pad mass (fat-pad mass: 1.3 ± 0.04 g, HFD-fed versus 0.89 ± 0.07 g, HFD-fed/ETC-1002; $P < 0.05$).

Reference: J Lipid Res. 2013 Aug;54(8):2095-2108. https://www.ncbi.nlm.nih.gov/pmc/articles/pmid/23709692/

Note: The information listed here was extracted from literature. MedKoo has not independently retested and confirmed the accuracy of these methods. Customer should use it just for a reference only.