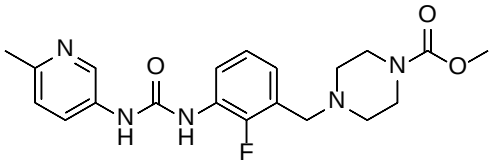
Product data sheet

MedKoo Cat#: 510321 Name: Omecamtiv mecarbil CAS: 873697-71-3 Chemical Formula: $C_{20}H_{24}FN_5O_3$ Exact Mass: 401.1863 Molecular Weight: 401.4424	
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:
Omecamtiv mecarbil, also known as CK-1827452, is a cardiac specific myosin activator. It is clinically tested for its role in the treatment of left ventricular systolic heart failure. Omecamtiv Mecarbil specifically targets and activates myocardial ATPase and improves energy utilization. Omecamtiv Mecarbil improves systolic function by increasing the systolic ejection duration/stroke volume, without consuming more ATP energy, oxygen or altering intracellular calcium levels causing an overall improvement in cardiac efficiency. (source: http://en.wikipedia.org/wiki/Omecamtiv_mecarbil)

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	74.73
DMF:PBS (pH 7.2) (1:2)	0.33	0.82
DMSO	36.67	91.34
Ethanol	5.5	13.70

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	**1 mg**	**5 mg**	**10 mg**
1 mM	2.49 mL	12.46 mL	24.91 mL
5 mM	0.50 mL	2.49 mL	4.98 mL
10 mM	0.25 mL	1.25 mL	2.49 mL
50 mM	0.05 mL	0.25 mL	0.50 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. Swenson AM, Tang W, Blair CA, Fetrow CM, Unrath WC, Previs MJ, Campbell KS, Yengo CM. Omecamtiv Mecarbil Enhances the Duty Ratio of Human β-Cardiac Myosin Resulting in Increased Calcium Sensitivity and Slowed Force Development in Cardiac Muscle. J Biol Chem. 2017 Mar 3;292(9):3768-3778. doi: 10.1074/jbc.M116.748780. Epub 2017 Jan 12. PMID: 28082673; PMCID: PMC5339759.

2. Morgan BP, Muci A, Lu PP, Qian X, Tochimoto T, Smith WW, Garard M, Kraynack E, Collibee S, Suehiro I, Tomasi A, Valdez SC, Wang W, Jiang H, Hartman J, Rodriguez HM, Kawas R, Sylvester S, Elias KA, Godinez G, Lee K, Anderson R, Sueoka S, Xu D, Wang Z, Djordjevic N, Malik FI, Morgans DJ Jr. Discovery of omecamtiv mecarbil the first, selective, small molecule activator of cardiac Myosin. ACS Med Chem Lett. 2010 Aug 20;1(9):472-7. doi: 10.1021/ml100138q. PMID: 24900233; PMCID: PMC4007828.

Product data sheet

In vivo study

1. Mamidi R, Gresham KS, Li A, dos Remedios CG, Stelzer JE. Molecular effects of the myosin activator omecamtiv mecarbil on contractile properties of skinned myocardium lacking cardiac myosin binding protein-C. J Mol Cell Cardiol. 2015 Aug;85:262-72. doi: 10.1016/j.yjmcc.2015.06.011. Epub 2015 Jun 20. PMID: 26100051; PMCID: PMC4667802.

2. Shen YT, Malik FI, Zhao X, Depre C, Dhar SK, Abarzúa P, Morgans DJ, Vatner SF. Improvement of cardiac function by a cardiac Myosin activator in conscious dogs with systolic heart failure. Circ Heart Fail. 2010 Jul;3(4):522-7. doi: 10.1161/CIRCHEARTFAILURE.109.930321. Epub 2010 May 24. PMID: 20498236.

7. Bioactivity

Biological target:

Omecamtiv mecarbil (CK-1827452) is a selective cardiac myosin activator.

In vitro activity

OM (omecamtiv mecarbil) can reduce the actin sliding velocity more than 100-fold in the in vitro motility assay. The ionic strength dependence of in vitro motility suggests the inhibition may be at least partially due to drag forces from weakly attached myosin heads. OM causes an increase in duty ratio examined in the motility assay. Experiments with permeabilized human myocardium demonstrate that OM increases calcium sensitivity and slows force development (ktr) in a concentration-dependent manner, whereas the maximally activated force is unchanged.

Reference: J Biol Chem. 2017 Mar 3;292(9):3768-3778. https://pubmed.ncbi.nlm.nih.gov/28082673/

In vivo activity

Omecamtiv mecarbil increased systolic function in sHF dogs, chronically instrumented to measure LV pressure, wall thickness, and cardiac output. Omecamtiv mecarbil, infused for 24 hours, induced a sustained increase without desensitization ($P<0.05$) in wall thickening (25+/-6.2%), stroke volume (44+/-6.5%) and cardiac output (22+/-2.8%), and decreased heart rate (15+/-3.0%).

Reference: Circ Heart Fail. 2010 Jul;3(4):522-7. https://pubmed.ncbi.nlm.nih.gov/20498236/

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.