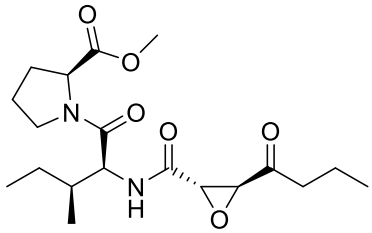
Product data sheet

MedKoo Cat#: 561713 Name: Ca-074Me CAS#: 147859-80-1 Chemical Formula: $C_{19}H_{30}N_2O_6$ Exact Mass: 382.2104 Molecular Weight: 382.45	
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:
Ca-074Me is a selective and cell-permeable inhibitor of cathepsin B.

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	200.0	522.94

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	2.61 mL	13.07 mL	26.15 mL
5 mM	0.52 mL	2.61 mL	5.23 mL
10 mM	0.26 mL	1.31 mL	2.61 mL
50 mM	0.05 mL	0.26 mL	0.52 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. Patel N, Nizami S, Song L, Mikami M, Hsu A, Hickernell T, Chandhanayingyong C, Rho S, Compton JT, Caldwell JM, Kaiser PB, Bai H, Lee HG, Fischer CR, Lee FY. CA-074Me compound inhibits osteoclastogenesis via suppression of the NFATc1 and c-FOS signaling pathways. J Orthop Res. 2015 Oct;33(10):1474-86. doi: 10.1002/jor.22795. Epub 2015 Aug 20. PMID: 25428830.

2. Cho K, Yoon SY, Choi JE, Kang HJ, Jang HY, Kim DH. CA-074Me, a cathepsin B inhibitor, decreases APP accumulation and protects primary rat cortical neurons treated with okadaic acid. Neurosci Lett. 2013 Aug 26;548:222-7. doi: 10.1016/j.neulet.2013.05.056. Epub 2013 Jun 5. PMID: 23748042.

In vivo study

1. Yan BZ, Chen LY, Kang L, Wang XR, Bi MR, Wang W, Yang BS. Hepatoprotective effects of cathepsin B inhibitor on acute hepatic failure induced by lipopolysaccharide/D-galactosamine in mice. Hepatobiliary Pancreat Dis Int. 2013 Feb;12(1):80-6. doi: 10.1016/s1499-3872(13)60010-7. PMID: 23392803.

2. Zhang L, Fu XH, Yu Y, Shui RH, Li C, Zeng HY, Qiao YL, Ni LY, Wang Q. Treatment with CA-074Me, a Cathepsin B inhibitor, reduces lung interstitial inflammation and fibrosis in a rat model of polymyositis. Lab Invest. 2015 Jan;95(1):65-77. doi: 10.1038/labinvest.2014.135. Epub 2014 Nov 10. PMID: 25384123.

7. Bioactivity

Product data sheet

Biological target:

CA-074 methyl ester (CA-074 Me, Cathepsin B Inhibitor IV) is a membrane-permeable derivative of CA-074 and acts as an irreversible cathepsin B inhibitor.

In vitro activity

In order to determine the critical timing of CA-074Me inhibition, osteoclastogenesis was induced through RANKL and CA-074Me was added at various time points after stimulation in vitro. It is interesting to note that CA-074Me maintains its anti-osteoclastogenic effect up to 24 h post-RANKL stimulation. This effect is possibly due to interference of an early cell signaling pathway. CA-074Me completely blocked osteoclast formation if administered within 12 h of RANKL stimulation. Even at the 24 h time point, the quantity of osteoclasts is still significantly reduced and the multinucleated morphology is altered (Fig. 4A and B). This experiment clearly shows that CA-074Me exerts it effect within 24 h after RANKL-stimulation of BMMs.

Reference: J Orthop Res. 2015 Oct;33(10):1474-86. https://doi.org/10.1002/jor.22795

In vivo activity

The marked elevation in serum aminotransferase activity and prothrombin time found in LPS/D-GalN-treated mice was significantly improved by pretreatment with CA-074me. The efficacy of CA-074me was also confirmed by histological analysis and TUNEL assay. The survival rate significantly improved in LPS/D-GalN-induced mice given CA-074me compared with untreated mice. LPS/D-GalN-induced caspase-3 and caspase-9 activation was remarkably suppressed by CA-074me. However, the increased levels of serum TNF-alpha and elevated caspase-8 activity in AHF mice were not significantly reduced by CA-074me. Moreover, CA-074me sharply reduced the increased expression of cytosolic cytochrome c and markedly augmented Bcl-2 expression.

Reference: Hepatobiliary Pancreat Dis Int. 2013 Feb;12(1):80-6. https://linkinghub.elsevier.com/retrieve/pii/S1499-3872(13)60010-7

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.