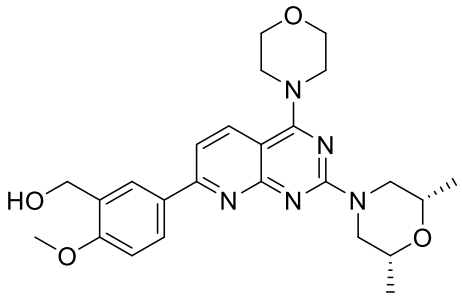
Product data sheet

MedKoo Cat#: 205776 Name: KU-0063794 CAS: 938440-64-3 Chemical Formula: $C_{25}H_{31}N_5O_4$ Exact Mass: 465.2376 Molecular Weight: 465.5447	
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:

KU-0063794 is a potent and selective mTOT inhibitor, which inhibits both mTORC1 and mTORC2 with an IC50 of approximately 10 nM, but does not suppress the activity of 76 other protein kinases or seven lipid kinases, including Class 1 PI3Ks (phosphoinositide 3-kinases) at 1000-fold higher concentrations. KU-0063794 is cell permeant, suppresses activation and hydrophobic motif phosphorylation of Akt, S6K and SGK, but not RSK (ribosomal S6 kinase), an AGC kinase not regulated by mTOR. Ku-0063794 also inhibited phosphorylation of the T-loop Thr308 residue of Akt phosphorylated by PDK1 (3-phosphoinositide-dependent protein kinase-1). Ku-0063794 will be useful in delineating the physiological roles of mTOR and may have utility in treatment of cancers in which this pathway is inappropriately activated.(Source: Biochem J. 2009 Jun 12;421(1):29-42)

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	5.0	10.74
DMF:PBS (pH 7.2) (1:1)	0.5	1.07
DMSO	9.83	21.12

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	2.15 mL	10.74 mL	21.48 mL
5 mM	0.43 mL	2.15 mL	4.30 mL
10 mM	0.21 mL	1.07 mL	2.15 mL
50 mM	0.04 mL	0.21 mL	0.43 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. Fei SJ, Zhang XC, Dong S, Cheng H, Zhang YF, Huang L, Zhou HY, Xie Z, Chen ZH, Wu YL. Targeting mTOR to overcome epidermal growth factor receptor tyrosine kinase inhibitor resistance in non-small cell lung cancer cells. PLoS One. 2013 Jul 16;8(7):e69104. doi: 10.1371/journal.pone.0069104. PMID: 23874880; PMCID: PMC3712950.

2. Collak FK, Yagiz K, Luthringer DJ, Erkaya B, Cinar B. Threonine-120 phosphorylation regulated by phosphoinositide-3-kinase/Akt and mammalian target of rapamycin pathway signaling limits the antitumor activity of mammalian sterile 20-like kinase 1. J Biol Chem. 2012 Jul 6;287(28):23698-709. doi: 10.1074/jbc.M112.358713. Epub 2012 May 22. PMID: 22619175; PMCID: PMC3390644.

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In vivo study

1. Zhang H, Berel D, Wang Y, Li P, Bhowmick NA, Figlin RA, Kim HL. A comparison of Ku0063794, a dual mTORC1 and mTORC2 inhibitor, and temsirolimus in preclinical renal cell carcinoma models. PLoS One. 2013;8(1):e54918. doi: 10.1371/journal.pone.0054918. Epub 2013 Jan 22. PMID: 23349989; PMCID: PMC3551765.

7. Bioactivity

Biological target:

KU-0063794 is a potent and specific mTOR inhibitor, inhibiting both the mTORC1 and mTORC2 complexes with IC_{50}s of 10 nM.

In vitro activity

The ATP-competitive mTOR inhibitor ku-0063794 showed dramatic antiproliferative effects and G1-cell cycle arrest in both sensitive and resistant cells. Ku-0063794 at the IC50 concentration effectively inhibited both mTOR and p70S6K phosphorylation levels; the latter is an mTORC1 substrate and did not upregulate Akt ser473 phosphorylation which would be induced by rapamycin and resulted in partial inhibition of FOXO1 phosphorylation.

Reference: PLoS One. 2013 Jul 16;8(7):e69104. https://pubmed.ncbi.nlm.nih.gov/23874880/

In vivo activity

Consistent with this possibility, temsirolimus, but not Ku0063794, decreased tumor angiogenesis in vivo, and decreased the viability of HUVEC (Human Umbilical Vein Endothelial Cells) cells in vitro at pharmacologically relevant concentrations.

Reference: PLoS One. 2013;8(1):e54918. https://pubmed.ncbi.nlm.nih.gov/23349989/

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.