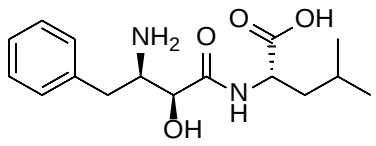
Product data sheet

MedKoo Cat#: 206765 Name: Ubenimex CAS#: 58970-76-6 (free base) Chemical Formula: $C_{16}H_{24}N_2O_4$ Exact Mass: 308.1736 Molecular Weight: 308.38	
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:
Ubenimex, also known as NK 421 and Bestatin, is a CD13 inhibitor. Ubenimex attenuates acquired sorafenib resistance in renal cell carcinoma by inhibiting Akt signaling in a lipophagy associated mechanism. Ubenimex synergistically enhances the effects of anticancer drugs in hepatocellular carcinoma. Ubenimex inhibits cell proliferation, migration and invasion by inhibiting the expression of APN and inducing autophagic cell death in prostate cancer cells.

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	6.17	20.01
PBS (pH 7.2)	0.16	0.52

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	**1 mg**	**5 mg**	**10 mg**
1 mM	3.24 mL	16.21 mL	32.43 mL
5 mM	0.65 mL	3.24 mL	6.49 mL
10 mM	0.32 mL	1.62 mL	3.24 mL
50 mM	0.06 mL	0.32 mL	0.65 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. Guo Q, Jing FJ, Xu W, Li X, Li X, Sun JL, Xing XM, Zhou CK, Jing FB. Ubenimex induces autophagy inhibition and EMT suppression to overcome cisplatin resistance in GC cells by perturbing the CD13/EMP3/PI3K/AKT/NF-κB axis. Aging (Albany NY). 2019 Dec 31;12(1):80-105. doi: 10.18632/aging.102598. Epub 2019 Dec 31. PMID: 31895687; PMCID: PMC6977684.
2. Wang X, Liu Y, Liu W, Zhang Y, Guo F, Zhang L, Cui M, Liu S, Wu R. Ubenimex, an APN inhibitor, could serve as an anti-tumor drug in RT112 and 5637 cells by operating in an Akt-associated manner. Mol Med Rep. 2018 Mar;17(3):4531-4539. doi: 10.3892/mmr.2018.8402. Epub 2018 Jan 9. PMID: 29328441; PMCID: PMC5802231.

In vivo study

1. Wang X, Niu Z, Jia Y, Cui M, Han L, Zhang Y, Liu Z, Bi D, Liu S. Ubenimex inhibits cell proliferation, migration and invasion by inhibiting the expression of APN and inducing autophagic cell death in prostate cancer cells. Oncol Rep. 2016 Apr;35(4):2121-30. doi: 10.3892/or.2016.4611. Epub 2016 Feb 3. PMID: 26846372.

7. Bioactivity
Biological target: Ubenimex is an aminopeptidase-B and leukotriene (LT) A4 hydrolase inhibitor.

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In vitro activity

The role of ubenimex in inhibiting migration and invasion was investigated by downregulating APN (Aminopeptidase N) expression levels to induce autophagic cell death and apoptosis in bladder cancer cells. Treatment with ubenimex was accompanied by decreased Akt expression, indicating that ubenimex may have similar functions to Akt inhibitors. Results also indicated that ubenimex inhibited cell migration and invasion in bladder cancer cells. Furthermore, ubenimex also induced autophagic cell death and apoptosis, which suggested that mixed programmed cell death occurred in ubenimex-treated bladder cancer cells.

Reference: Mol Med Rep. 2018 Mar;17(3):4531-4539. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5802231/

In vivo activity

The antitumor growth effect of ubenimex was evaluated in vivo. Tumors were induced by the injection of PC-3 cells into nude mice. The body weights of the mice were measured weekly. Fig. 7A shows that none of the treatments produced any loss in body weight, which would constitute a sign of toxicity. The tumor weight in the nude mice was significantly reduced in a dose-dependent manner following ubenimex treatment (Fig. 7B and C). Thus, it can be demonstrated that ubenimex inhibited PC-3 cell proliferation in vivo.

Reference: Oncol Rep. 2016 Apr;35(4):2121-30. https://www.spandidos-publications.com/or/35/4/2121