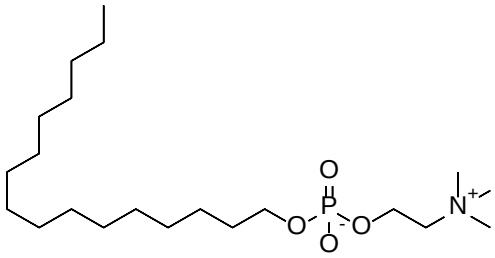
Product data sheet

MedKoo Cat#: 201890 Name: Miltefosine CAS: 58066-85-6 Chemical Formula: $C_{21}H_{46}NO_4P$ Exact Mass: 407.3165 Molecular Weight: 407.5758	
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:

Miltefosine is an orally- and topically-active alkyl-phosphocholine compound with potential antineoplastic activity. Miltefosine targets cellular membranes, modulating cell membrane permeability, membrane lipid composition, phospholipid metabolism, and mitogenic signal transduction, resulting in cell differentiation and inhibition of cell growth. This agent also inhibits the anti-apoptotic mitogen-activated protein kinase (MAPK) pathway and modulates the balance between the MAPK and pro-apoptotic stress-activated protein kinase (SAPK/JNK) pathways, thereby inducing apoptosis. As an immunomodulator, miltefosine stimulates T-cells, macrophages and the expression of interleukin 3 (IL-3), granulocyte-macrophage colony stimulating factor (GM-CSF), and interferon gamma (INF-gamma). Check for active clinical trials or closed clinical trials using this agent. (NCI Thesaurus).

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	5.0	12.27
Ethanol	81.0	198.74
Water	65.5	160.71

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	**1 mg**	**5 mg**	**10 mg**
1 mM	2.45 mL	12.27 mL	24.54 mL
5 mM	0.49 mL	2.45 mL	4.91 mL
10 mM	0.25 mL	1.23 mL	2.45 mL
50 mM	0.05 mL	0.25 mL	0.49 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. de Freitas-Junior PR, Catta-Preta CM, Andrade Ida S, Cavalcanti DP, de Souza W, Einicker-Lamas M, Motta MC. Effects of miltefosine on the proliferation, ultrastructure, and phospholipid composition of Angomonas deanei, a trypanosomatid protozoan that harbors a symbiotic bacterium. FEMS Microbiol Lett. 2012 Aug;333(2):129-37. doi: 10.1111/j.1574-6968.2012.02607.x. Epub 2012 Jun 18. PMID: 22651853.
2. Chugh P, Bradel-Tretheway B, Monteiro-Filho CM, Planelles V, Maggirwar SB, Dewhurst S, Kim B. Akt inhibitors as an HIV-1 infected macrophage-specific anti-viral therapy. Retrovirology. 2008 Jan 31;5:11. doi: 10.1186/1742-4690-5-11. PMID: 18237430; PMCID: PMC2265748.

In vivo study

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1. Knuplez E, Kienzl M, Trakaki A, Schicho R, Heinemann A, Sturm EM, Marsche G. The anti-parasitic drug miltefosine suppresses activation of human eosinophils and ameliorates allergic inflammation in mice. Br J Pharmacol. 2021 Mar;178(5):1234-1248. doi: 10.1111/bph.15368. Epub 2021 Feb 2. Erratum in: Br J Pharmacol. 2021 May;178(10):2161. PMID: 33450054; PMCID: PMC9328393.
2. Bäumer W, Wlaź P, Jennings G, Rundfeldt C. The putative lipid raft modulator miltefosine displays immunomodulatory action in T-cell dependent dermal inflammation models. Eur J Pharmacol. 2010 Feb 25;628(1-3):226-32. doi: 10.1016/j.ejphar.2009.11.018. Epub 2009 Nov 14. PMID: 19917276.

7. Bioactivity

Biological target:

Miltefosine is an inhibitor of CTP-phosphocholine cytidyltransferase (CCT).

In vitro activity

This study tested the effects of miltefosine in A. deanei proliferation, as well as, on the ultrastrucuture and phospholipid composition considering that this drug inhibits the CTP-phosphocholine cytidyltransferase (CCT), a key enzyme in the PC biosynthesis. Besides the low effect of miltefosine in cellular proliferation, treated protozoa presented ultrastructural alterations such as plasma membrane shedding and blebbing, mitochondrial swelling, and convolutions of the endosymbiont envelope.

Reference: FEMS Microbiol Lett. 2012 Aug;333(2):129-37. https://pubmed.ncbi.nlm.nih.gov/22651853/

In vivo activity

In the toluene diisocyanate induced ear swelling test, miltefosine, administered topically as 2 and 6% solution or orally, attenuated ear swelling reaching 70% of the effect of dexamethasone at 100mg/kg p.o. ($P<0.01$). Miltefosine significantly attenuated the allergic sensitization in the model of ovalbumin induced delayed-type hypersensitivity in mice.

Reference: Eur J Pharmacol. 2010 Feb 25;628(1-3):226-32. https://pubmed.ncbi.nlm.nih.gov/19917276/

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.