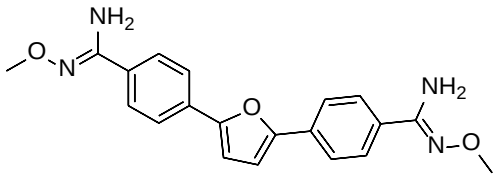
Product data sheet

MedKoo Cat#: 326798 Name: Pafuramidine CAS: 186953-56-0 Chemical Formula: $C_{20}H_{20}N_4O_3$ Exact Mass: 364.1535 Molecular Weight: 364.405	
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:
Pafuramidine, also known as DB289, is an orally bioavailable prodrug of furamidine (DB75) which was developed for the treatment of human African trypanosomiasis. Pafuramidine is less toxic than previous diamidines such as pentamidine. To date, human trials suggest that pafuramidine is well tolerated overall and has clinical activity against Pneumocystis pneumonia. DB289 is a promising new antimalarial compound that could become an important component of new antimalarial combinations.

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	33.33	91.46

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	2.74 mL	13.72 mL	27.44 mL
5 mM	0.55 mL	2.74 mL	5.49 mL
10 mM	0.27 mL	1.37 mL	2.74 mL
50 mM	0.06 mL	0.27 mL	0.55 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. An X, Lee J, Kim GH, Kim HJ, Pyo HJ, Kwon I, Cho H. Modulation of IKs channel-PIP2 interaction by PRMT1 plays a critical role in the control of cardiac repolarization. J Cell Physiol. 2022 Jul;237(7):3069-3079. doi: 10.1002/jcp.30775. Epub 2022 May 17. PMID: 35580065; PMCID: PMC9543859.
2. Jenquin JR, Coonrod LA, Silverglate QA, Pellitier NA, Hale MA, Xia G, Nakamori M, Berglund JA. Furamidine Rescues Myotonic Dystrophy Type I Associated Mis-Splicing through Multiple Mechanisms. ACS Chem Biol. 2018 Sep 21;13(9):2708-2718. doi: 10.1021/acschembio.8b00646. Epub 2018 Aug 27. PMID: 30118588; PMCID: PMC6343479.

In vivo study

1. Mdachi RE, Thuita JK, Kagira JM, Ngotho JM, Murilla GA, Ndung'u JM, Tidwell RR, Hall JE, Brun R. Efficacy of the novel diamidine compound 2,5-Bis(4-amidinophenyl)- furan-bis-O-Methlylamidoxime (Pafuramidine, DB289) against Trypanosoma brucei rhodesiense infection in vervet monkeys after oral administration. Antimicrob Agents Chemother. 2009 Mar;53(3):953-7. doi: 10.1128/AAC.00831-08. Epub 2008 Dec 8. PMID: 19064893; PMCID: PMC2650535.
2. Thuita JK, Karanja SM, Wenzler T, Mdachi RE, Ngotho JM, Kagira JM, Tidwell R, Brun R. Efficacy of the diamidine DB75 and its prodrug DB289, against murine models of human African trypanosomiasis. Acta Trop. 2008 Oct;108(1):6-10. doi: 10.1016/j.actatropica.2008.07.006. Epub 2008 Aug 5. PMID: 18722336.

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7. Bioactivity

Biological target:

Pafuramidine (DB289) is an orally active prodrug of Furamidine (HY-110137A). Pafuramidine is a potent anti-parasitic agent, can be used to research trypanosomiasis, Pneumocystis pneumonia and malaria.

In vitro activity

In the guinea pig ventricular myocytes, treatment with furamidine, a PRMT1-specific inhibitor, prolonged the action potential duration (APD). This study further show that this APD prolongation was attributable to I_{Ks} reduction. In HEK293T cells expressing human KCNQ1 and KCNE1, inhibiting PRMT1 via furamidine reduced I_{Ks} and concurrently decreased the arginine methylation of KCNQ1, a pore-forming α-subunit.

Reference: J Cell Physiol. 2022 Jul;237(7):3069-3079. https://pubmed.ncbi.nlm.nih.gov/35580065/

In vivo activity

The efficacy of a novel orally administered prodrug, 2,5-bis(4-amidinophenyl)-furan-bis-O-methylamidoxime (pafuramidine, DB289), was tested in the vervet monkey (Chlorocebus [Cercopithecus] aethiops) model of sleeping sickness. In the groups treated in the early stage, 10 mg/kg of pafuramidine completely cured all three monkeys, whereas lower doses of 3 mg/kg and 1 mg/kg cured only one of three and zero of three monkeys, respectively. Treatment of late-stage infections resulted in cure rates of one of three (group 4) and zero of three (group 5) monkeys. These studies demonstrated that pafuramidine was orally active in monkeys with early-stage T. brucei rhodesiense infections at dose rates above 3 mg/kg for 5 days.

Reference: Antimicrob Agents Chemother. 2009 Mar;53(3):953-7. https://pubmed.ncbi.nlm.nih.gov/19064893/

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.