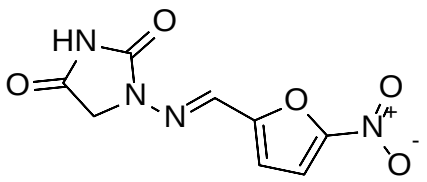
Product data sheet

MedKoo Cat#: 318372 Name: Nitrofurantoin CAS: 67-20-9 Chemical Formula: $C_8H_6N_4O_5$ Exact Mass: 238.0338 Molecular Weight: 238.157	
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:
Nitrofurantoin is an antibiotic used to treat bladder infections. Although sulfonamides and antibiotics are usually the agents of choice for urinary tract infections, nitrofurantoin is widely used for prophylaxis and long-term suppression. It is not effective for kidney infections.

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	25.0	104.97
DMSO	57.33	240.74
DMSO:PBS (pH 7.2) (1:2)	0.5	2.10
Ethanol	15.0	62.98

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	4.20 mL	20.99 mL	41.99 mL
5 mM	0.84 mL	4.20 mL	8.40 mL
10 mM	0.42 mL	2.10 mL	4.20 mL
50 mM	0.08 mL	0.42 mL	0.84 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. Sandegren L, Lindqvist A, Kahlmeter G, Andersson DI. Nitrofurantoin resistance mechanism and fitness cost in Escherichia coli. J Antimicrob Chemother. 2008 Sep;62(3):495-503. doi: 10.1093/jac/dkn222. Epub 2008 Jun 10. PMID: 18544599.
2. Martin WJ 2nd. Nitrofurantoin: evidence for the oxidant injury of lung parenchymal cells. Am Rev Respir Dis. 1983 Apr;127(4):482-6. doi: 10.1164/arrd.1983.127.4.482. PMID: 6838054.

In vivo study

1. Suganuma K, N'Da DD, Watanabe KI, Tanaka Y, Mossaad E, Elata A, Inoue N, Kawazu SI. Therapeutic Efficacy of Orally Administered Nitrofurantoin against Animal African Trypanosomosis Caused by Trypanosoma congolense Infection. Pathogens. 2022 Mar 9;11(3):331. doi: 10.3390/pathogens11030331. PMID: 35335655; PMCID: PMC8956101.
2. Yeo SJ, Jin C, Kim S, Park H. In Vitro and in Vivo Effects of Nitrofurantoin on Experimental Toxoplasmosis. Korean J Parasitol. 2016 Apr;54(2):155-61. doi: 10.3347/kjp.2016.54.2.155. Epub 2016 Apr 30. PMID: 27180573; PMCID: PMC4870977.

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7. Bioactivity

Biological target:

Nitrofurantoin is a potent and orally active broad-spectrum beta-lactamase antimicrobial agent.

In vitro activity

By plating bacterial cells on agar plates containing nitrofurantoin, spontaneous nitrofurantoin-resistant E. coli mutants were isolated. Furthermore, the bacterial growth rate in the presence of nitrofurantoin at therapeutic levels was greatly reduced even for nitrofurantoin-resistant mutants.

Reference: J Antimicrob Chemother. 2008 Sep;62(3):495-503. https://pubmed.ncbi.nlm.nih.gov/18544599/

In vivo activity

In this study, the compound, (Z)-1-[(5-nitrofuran-2-yl)methyleneamino]-imidazolidine-2,4-dione (nitrofurantoin), showed anti-T. gondii effects in vitro and in vivo. In T. gondii-infected female ICR mice, the inhibition rate of T. gondii growth in the peritoneal cavity was 44.7% compared to the negative control group after 4-day treatment with 100 mg/kg of nitrofurantoin.

Reference: Korean J Parasitol. 2016 Apr;54(2):155-61. https://pubmed.ncbi.nlm.nih.gov/27180573/

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.