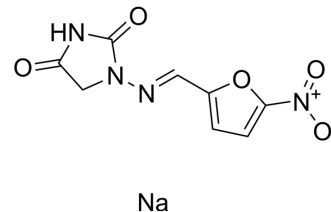


Nitrofurantoin sodium

Cat. No.:	HY-A0090A
CAS No.:	54-87-5
Molecular Formula:	C ₈ H ₆ N ₄ NaO ₅
Molecular Weight:	261.15
Target:	Antibiotic; Bacterial
Pathway:	Anti-infection
Storage:	Please store the product under the recommended conditions in the Certificate of Analysis.



BIOLOGICAL ACTIVITY

Description	Nitrofurantoin sodium is a potent and orally active antibacterial agent. Nitrofurantoin sodium acts as an antibiotic. Nitrofurantoin sodium can be used for the study of urinary tract infections (UTIs), including cystitis and kidney infections ^[1] [2].													
In Vitro	<p>Nitrofurantoin sodium (0-512 mg/L; 8 h) treatment inhibits the growth of E. coli isolates^[3]. MCE has not independently confirmed the accuracy of these methods. They are for reference only. Cell Viability Assay^[3]</p> <table border="1"> <tr> <td>Cell Line:</td> <td colspan="2">E. coli isolates: DA10708, DA13815, DA13824, DA13957, DA13992, DA10626, DA10627</td> </tr> <tr> <td>Concentration:</td> <td colspan="2">0, 32, 64, 128, 256, and 512 mg/L</td> </tr> <tr> <td>Incubation Time:</td> <td colspan="2">8 hours</td> </tr> <tr> <td>Result:</td> <td colspan="2">Observed bactericidal effect at 32 mg/L For DA10708, DA13815 and DA13824. Inhibited the growth of DA13957 and DA13992 completely at 128 mg/L, observed bactericidal effect at 256 mg/L. Showed a moderate killing at >128 mg/L for DA10626 and DA10627.</td> </tr> </table>		Cell Line:	E. coli isolates: DA10708, DA13815, DA13824, DA13957, DA13992, DA10626, DA10627		Concentration:	0, 32, 64, 128, 256, and 512 mg/L		Incubation Time:	8 hours		Result:	Observed bactericidal effect at 32 mg/L For DA10708, DA13815 and DA13824. Inhibited the growth of DA13957 and DA13992 completely at 128 mg/L, observed bactericidal effect at 256 mg/L. Showed a moderate killing at >128 mg/L for DA10626 and DA10627.	
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In Vivo	Nitrofurantoin pharmacokinetic effects in SD Rats ^[4] .													
	Parameters	10 mg/kg p.o. 2 mg/kg i.v.												
	AUC ₀₋₇₂₀ (µg/mL•min)	306												
	AUC ₀₋₁₂₀ (µg/mL•min)	90.3												
	AUC _{0-∞} (µg/mL•min)	344 91.5												
	C _{max} (µg/mL)	1.01												

CL/F or CL (ml/min/kg)	31.0	22.7
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t _{1/2} (min)	166	23.6
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Bioavailability (%)	60.1	
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CUSTOMER VALIDATION

- Nat Commun. 2022 Mar 2;13(1):1116.
- Water Res. 2023 May 21, 120110.
- Biotechnol Bioeng. 2021 Sep 3.
- Microbiol Spectr. 2022 Jan 12;e0099121.
- Research Square Preprint. 2021 Aug.

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REFERENCES

- [1]. Huttner A, et al. Nitrofurantoin revisited: a systematic review and meta-analysis of controlled trials. J Antimicrob Chemother. 2015 Sep;70(9):2456-64.
- [2]. Garau J. Other antimicrobials of interest in the era of extended-spectrum beta-lactamases: fosfomicin, nitrofurantoin and tigecycline. Clin Microbiol Infect. 2008 Jan;14 Suppl 1:198-202.
- [3]. Linus Sandegren, et al. Nitrofurantoin resistance mechanism and fitness cost in Escherichia coli. J Antimicrob Chemother. 2008 Sep;62(3):495-503.
- [4]. Xiaodong Wang, et al. Effects of the flavonoid chrysin on nitrofurantoin pharmacokinetics in rats: potential involvement of ABCG2. Drug Metab Dispos. 2007 Feb;35(2):268-74.
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Caution: Product has not been fully validated for medical applications. For research use only.

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