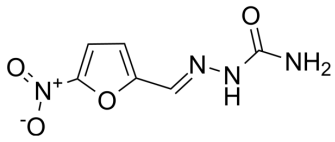
Nitrofurazone

Cat. No.:	HY-B0226
CAS No.:	59-87-0
Molecular Formula:	$C_6H_6N_4O_4$
Molecular Weight:	198.14
Target:	Bacterial; Antibiotic
Pathway:	Anti-infection
Storage:	Powder -20°C 3 years 4°C 2 years In solvent -80°C 2 years -20°C 1 year



SOLVENT & SOLUBILITY

In Vitro

DMSO : ≥ 155 mg/mL (782.28 mM)

* "≥" means soluble, but saturation unknown.

Preparing Stock Solutions	Solvent / Mass / Concentration	1 mg	5 mg	10 mg
	1 mM	5.0469 mL	25.2347 mL	50.4694 mL
	5 mM	1.0094 mL	5.0469 mL	10.0939 mL
	10 mM	0.5047 mL	2.5235 mL	5.0469 mL

Please refer to the solubility information to select the appropriate solvent.

In Vivo

1. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: ≥ 2.58 mg/mL (13.02 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.58 mg/mL (13.02 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Nitrofurazone (Nitrofural) is a broad spectrum antibiotic that has oral activity. Nitrofurazone is a nitro-aromatic drug. Nitrofurazone is active against both Gram-positive and Gram-negative bacteria[1][2][3][4][5].

In Vitro

Nitrofurazone (10-20 μg/mL) can make E. coli strain B/r triple resistant mutants, increasing drug resistance by 6 to 7 times[2]. Nitrofurazone (50 μg/mL, 30 min) inhibits the synthesis of all color RNA and ribosomal subunits and the formation of polysomes in E. coli strain B/r[3].

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

RT-PCR[3]

Cell Line:	E. Coli stratin B/r
Concentration:	50 μg/mL
Incubation Time:	30 min
Result:	Inhibited the synthesis of 16 and 23s ribosomal RNA and 45 RNA.

In Vivo

Nitrofurazone (15 or 25 mg/kg, rat, feed; 15 or 31 mg/kg, mice, feed) is carcinogenic in female rats and female mice[4]. Nitrofurazone (11 and 111 mg/kg/ day, Oral gavage for mice; 0.78 and 7.8 mg/kg/ day, Oral gavage for guinea pigs) has no antibacterial activity in mice and guinea pigs[5].

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

CUSTOMER VALIDATION

- Chem Biol Interact. 2022 Oct 13;110222.
- Massey University. Microbiology.
- Research Square Preprint. 2021 Aug.

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REFERENCES

[1]. McCalla DR, et al. Mode of action of nitrofurazone. J Bacteriol. 1970 Dec;104(3):1126-34.

[2]. Tu Y, et al. Effect of nitrofurazone on bacterial RNA and ribosome synthesis and on the function of ribosomes. Chem Biol Interact. 1976 Jul;14(1-2):81-91.

[3]. Z Kari FW, et al. Toxicity and carcinogenicity of nitrofurazone in F344/N rats and B6C3F1 mice. Food Chem Toxicol. 1989 Feb;27(2):129-37.

[4]. Neal RA, et al. The activity of nitrofurazone and furazolidone against Leishmania donovani, L. major and L. enriettii in vitro and in vivo. Ann Trop Med Parasitol. 1988 Oct;82(5):453-6.

[5]. Ryan A, et al. Activation of nitrofurazone by azoreductases: multiple activities in one enzyme. Sci Rep. 2011;1:63.

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