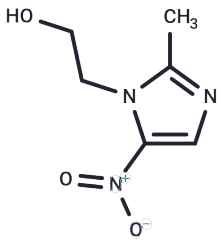
Data Sheet (Cat.No.T1079)

TargetMol

Metronidazole

Chemical Properties



CAS No. : 443-48-1

Formula: C6H9N3O3

Molecular Weight: 171.15

Storage: Powder: -20°C for 3 years | In solvent: -80°C for 1 year
Actual storage temperature shall be subject to the COA.

Biological Description

Description	Metronidazole (Metronidazol) is a synthetic nitroimidazole derivative with antiprotozoal and antibacterial activities.
Targets(IC50)	Apoptosis,Antibacterial,Antibiotic,Parasite,Antifection,Hydrogenase,NADPH
In vitro	Metronidazole is relatively inactive until it is metabolized within host or microbial cells. Metronidazole is activated when it receives an electron from ferredoxin or fla vodoxin that is reduced by POR in anaerobic or microaerophilic bacteria or luminal parasites. Metronidazole damages cells by forming protein and DNA adducts. [1] Metronidazole has activity against protozoans like Entamoeba histolytica, Giardia lamblia and Trichomonas vaginalis, for which the drug is first approved as an effective treatment. The activity of metronidazole against anaerobic bowel flora has been used for prophylaxis and treatment of patients with Crohn's disease who might develop an infectious complication. Metronidazole has played an important role in anaerobic-related infections. Metronidazole has notable effectiveness in treating anaerobic brain abscesses. [2] Metronidazole resistance tends to result from de novo mutation in the resident rdxA gene, rather than from lateral transfer of mutant rdxA (or other) genes from unrelated but Mtzr strains. Metronidazole partially inhibits growth stimulate forward mutation to rifampin resistance in rdxA(+) (Metronidazole(s)) and also in rdxA (Metronidazole(r)) H. pylori strains, and that expression of rdxA in Escherichia coli results in equivalent Mtz-induced mutation. [3] Metronidazole leads to apoptosis-like features in growing cultures of axenic B. hominis, including key morphological and biochemical features of programmed cell death (PCD), viz. nuclear condensation and nicked DNA in nucleus, reduced cytoplasmic volume, externalization of phosphatidylserine and maintenance of plasma membrane integrity with increasing
In vivo	**METHODS**: To assay antimicrobial activity in vivo, Metronidazole (3-15 mg/kg) was administered once daily by gavage to M. tuberculosis Erdman-infected C57BL/6 mice. **RESULTS**: Metronidazole did not reduce the number of bacteria in the lungs of aerosolized infected mice during the active phase of the disease, during the control phase, or after long-term isoniazid treatment (Cornell model). Small but significant reductions were seen if Metronidazole treatment was given in the established chronic disease state 100 days after aerosol administration. [3]

Solubility Information

Solubility	Ethanol: < 1 mg/mL (insoluble or slightly soluble), DMSO: 260 mg/mL (1519.14 mM),Sonication is recommended. H2O: 10 mg/mL (58.43 mM),Sonication is recommended. (< 1 mg/ml refers to the product slightly soluble or insoluble)
In vivo Formulation	10% DMSO+90% Saline: 3.2 mg/mL (18.7 mM),Solution. *Please add the solvents sequentially, clarifying the solution as much as possible before adding the next one. Dissolve by heating and/or sonication if necessary. Working solution is recommended to be prepared and used immediately. The formulation provided above is for reference purposes only. In vivo formulations may vary and should be modified based on specific experimental conditions.*

Preparing Stock Solutions

	1mg	5mg	10mg
1 mM	5.8428 mL	29.2141 mL	58.4283 mL
5 mM	1.1686 mL	5.8428 mL	11.6857 mL
10 mM	0.5843 mL	2.9214 mL	5.8428 mL
50 mM	0.1169 mL	0.5843 mL	1.1686 mL

Please select the appropriate solvent to prepare the stock solution, according to the solubility of the product in different solvents. Please use it as soon as possible.

Note: The dilution table applies only to solid products. For liquid products, please calculate the stock solution based on the stated concentration and/or density.

Reference

Sadowska A, et al. Metronidazole decreases viability of DLD-1 colorectal cancer cell line. Cancer Biother Radiopharm. 2013 Oct;28(8):615-22.
Shan T, Huang Y, Zhao Z, et al. Ketogenic diet restrains herpes simplex encephalitis via gut microbes. Microbes and Infection. 2022: 105061.
Li F, Wang Y, Song X, et al. The intestinal microbial metabolite nicotinamide n-oxide prevents herpes simplex encephalitis via activating mitophagy in microglia. Gut Microbes. 2022, 14(1): 2096989
Dhurga DB, et al. Granular Formation during Apoptosis in Blastocystis sp. Exposed to Metronidazole (MTZ). PLoS One. 2016 Jul 29;11(7):e0155390.
Brooks JV, et al. Metronidazole therapy in mice infected with tuberculosis. Antimicrob Agents Chemother. 1999 May;43(5):1285-8.
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