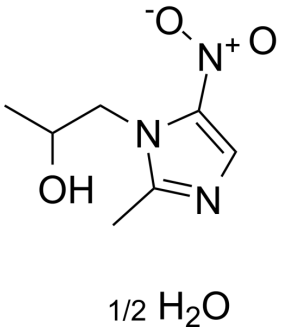
Secnidazole hemihydrate

Cat. No.:	HY-B1118A
CAS No.:	227622-73-3
Molecular Formula:	$C_7H_{13}N_3O_4$
Molecular Weight:	194.19
Target:	Antibiotic; Bacterial; Parasite
Pathway:	Anti-infection
Storage:	Please store the product under the recommended conditions in the Certificate of Analysis.



BIOLOGICAL ACTIVITY

Description

Secnidazole (RP-14539) hemihydrate is an orally active azole antibiotic and a imidazole mitigator of Serratia marcescens virulence. Secnidazole hemihydrate, as an analog of acylhomoserine lactones, effectively inhibits QS resulting in the attenuation of Pseudomonas aeruginosa pathogenesis. Secnidazole hemihydrate has antimicrobial activity against many anaerobic Gram-negative and Gram-positive bacterial species in vitro. Secnidazole hemihydrate can be used for the research of various diseases, such as amoebiasis and giardiasis, and bacterial vaginitis[1][2][3].

IC_{50} & Target

Amebae

In Vitro

Secnidazole (RP-14539) hemihydrate (0-5000 μM; 5 or 10 min) inhibits CYP2C19 and CYP3A4, with IC_{50} values of 3873 μM and 3722 μM, respectively[2].

Secnidazole hemihydrate (0-5000 μM; 5 or 10 min) does not exhibit time-dependent inhibition[2].

Secnidazole hemihydrate (0-5000 μM; 5 or 10 min) has an apparent IC_{50} value of 503 μM for direct inhibition of human ALDH2[2].

Secnidazole hemihydrate (0-5000 μM; 5 or 10 min) has concentration-dependent inhibition at higher concentration with some of the CYP isoforms notably CYP2A6, CYP2B6, and CYP2D6[2].

Secnidazole hemihydrate (10 μL; 20 h; the secnidazole solution was two-fold serially diluted using Mueller–Hinton broth to obtain dilutions ranging from 80 to 0.3125 mg/mL) inhibits S.marcescens growth with a MIC_{50} value of 10 mg/mL[3].

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

Cell Viability Assay[3]

Cell Line:	S.marcescens
Concentration:	10 μL (the secnidazole solution was two-fold serially diluted using Mueller–Hinton broth to obtain dilutions ranging from 80 to 0.3125 mg/mL)
Incubation Time:	20 h
Result:	Had no inhibitory effect on S.marcescens growth at 2 mg/mL (equivalent to 1/5 MIC).

In Vivo

Secnidazole (RP-14539) hemihydrate (100 μL; ip.; for 5 days) has protective activity against S.marcescens pathogenesis and can diminish its pathogenesis in mice[3].

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

Animal Model:	Female healthy albino mice[3]
Dosage:	100 μL
Administration:	100 μL; ip.; for 5 days
Result:	Significantly diminished the bacteria s capacity to kill mice.

REFERENCES

[1]. Secnidazole. LiverTox: Clinical and Research Information on Drug-Induced Liver Injury, National Institute of Diabetes and Digestive and Kidney Diseases, 25 February 2020.

[2]. Helen S Pentikis, et al. In vitro metabolic profile and drug-drug interaction assessment of secnidazole, a high-dose 5-nitroimidazole antibiotic for the treatment of bacterial vaginosis. Pharmacol Res Perspect. 2020 Aug;8(4):e00634.

[3]. Ahdab N Khayyat, et al. Secnidazole Is a Promising Imidazole Mitigator of Serratia marcescens Virulence. Microorganisms. 2021 Nov 11;9(11):2333.

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