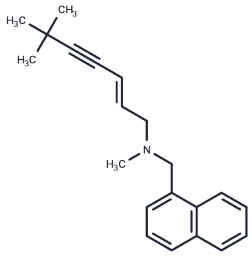
Data Sheet (Cat.No.T6702)

TargetMol

Terbinafine

Chemical Properties



CAS No. : 91161-71-6

Formula: C21H25N

Molecular Weight: 291.43

Storage: Store at low temperature
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	Terbinafine (TDT 067) is a synthetic allylamine derivative with antifungal activity. Terbinafine exerts its effect through inhibition of squalene epoxidase, thereby blocking the biosynthesis of ergosterol, an important component of fungal cell membranes. As a result, this agent disrupts fungal cell membrane synthesis and inhibits fungal growth.
Targets(IC50)	Antibacterial,Antibiotic,Antifungal
In vitro	Terbinafine (50 μM to 100 μM) inhibits only marginally the metabolism of ethoxycoumarin (CYP1A2), tolbutamide (CYP2C9), or ethynylestradiol, CsA, and cortisol. Terbinafine proves to be a potent inhibitor of the CYP2D6-mediated dextromethorphan O-demethylation and bufuralol 1-hydroxylation with IC50values of 0.2 μM and 0.25 μM, respectively. [1] Terbinafine is highly activ Aspergillus isolates (minimum inhibitory concentration [MIC] 0.01 to 2 mg/mL) with a primary fungicidal action (minimum fungicidal concentration [MFC] 0.02 to 4 mg/mL). [2] Terbinafine inhibits dextromethorphan O-demethylation with an apparent Ki ranging from 28 to 44 nM in human hepatic microsomes and averaging 22.4 nM for the heterologously expressed enzymes. [3] Terbinafine shows a very strong activity in vitro against Penicillium spp., Paecilomyces spp., Trichoderma spp., Acremonium spp. and Arthrographis spp. with GMs <1 mg/L. [4] Terbinafine decreases the levels of phosphorylated extracellular signal-regulated kinase (ERK). Terbinafine might cause a decrease of MEK, which in turn up-regulates p53 through the inhibition of ERK phosphorylation, and finally causes an increase of p21expression and cell-cycle arrest. [5]
In vivo	Terbinafine demonstrates efficacy not only when administered topically but also shows remarkable effectiveness in treating experimental dermatophytoses upon oral administration. In fungal-infected guinea pigs, there is a significant reduction in skin temperature following the fourth dose of terbinafine[6].

Solubility Information

Solubility	Ethanol: 58 mg/mL (199.02 mM),Sonication is recommended. H2O: < 1 mg/mL (insoluble or slightly soluble), DMSO: 125 mg/mL (428.92 mM),Sonication is recommended. (< 1 mg/ml refers to the product slightly soluble or insoluble)

In vivo Formulation	10% DMSO+40% PEG300+5% Tween 80+45% Saline: 2 mg/mL (6.86 mM),Sonication is recommended. *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	3.4314 mL	17.1568 mL	34.3136 mL
5 mM	0.6863 mL	3.4314 mL	6.8627 mL
10 mM	0.3431 mL	1.7157 mL	3.4314 mL
50 mM	0.0686 mL	0.3431 mL	0.6863 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

Vickers AE, et al. Drug Metab Dispos, 1999, 27(9), 1029-1038.
Zhao F, Huang Y, Zhang Y, et al. SQLE inhibition suppresses the development of pancreatic ductal adenocarcinoma and enhances its sensitivity to chemotherapeutic agents in vitro. Molecular Biology Reports. 2022: 1-9
Ye Z, Ai X, Yang K, et al.Targeting Microglial Metabolic Rewiring Synergizes with Immune Checkpoint Blockade Therapy for Glioblastoma.Cancer Discovery.2023
Ryder NS, et al. Med Mycol, 2001, 39(1), 91-95.
Liu Y, Wang Z, Jin H, et al.Squalene-epoxidase-catalyzed 24 (S), 25-epoxycholesterol synthesis promotes trained-immunity-mediated antitumor activity.Cell Reports.2024, 43(4).
Abdel-Rahman SM, et al. Drug Metab Dispos, 1999, 27(7), 770-775.
Garcia-Effron G, et al. J Antimicrob Chemother, 2004, 53(6), 1086-1089.
Ho PY, et al. Toxicol Appl Pharmacol, 2008, 229(1), 86-93.