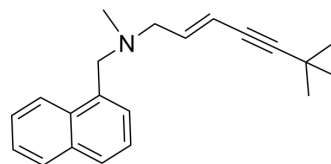


## Terbinafine

|                           |                                   |       |         |
|---------------------------|-----------------------------------|-------|---------|
| <b>Cat. No.:</b>          | HY-17395A                         |       |         |
| <b>CAS No.:</b>           | 91161-71-6                        |       |         |
| <b>Molecular Formula:</b> | C <sub>21</sub> H <sub>25</sub> N |       |         |
| <b>Molecular Weight:</b>  | 291.43                            |       |         |
| <b>Target:</b>            | Fungal; Bacterial; Antibiotic     |       |         |
| <b>Pathway:</b>           | Anti-infection                    |       |         |
| <b>Storage:</b>           | Powder                            | -20°C | 3 years |
|                           |                                   | 4°C   | 2 years |
|                           | In solvent                        | -80°C | 2 years |
|                           |                                   | -20°C | 1 year  |



### SOLVENT & SOLUBILITY

#### In Vitro

DMSO : ≥ 100 mg/mL (343.14 mM)  
 \* "≥" means soluble, but saturation unknown.

|                              | Solvent<br>Concentration | Mass      |            |            |
|------------------------------|--------------------------|-----------|------------|------------|
|                              |                          | 1 mg      | 5 mg       | 10 mg      |
| Preparing<br>Stock Solutions | 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  |

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

#### In Vivo

- Add each solvent one by one: 0.5% CMC-Na/saline water  
Solubility: 16.25 mg/mL (55.76 mM); Suspended solution; Need ultrasonic
- Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline  
Solubility: ≥ 2.5 mg/mL (8.58 mM); Clear solution
- Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)  
Solubility: 2.5 mg/mL (8.58 mM); Suspended solution; Need ultrasonic
- Add each solvent one by one: 10% DMSO >> 90% corn oil  
Solubility: 2.5 mg/mL (8.58 mM); Clear solution; Need ultrasonic

### BIOLOGICAL ACTIVITY

#### Description

Terbinafine (TDT 067) is an orally active and potent antifungal agent. Terbinafine is a potent non-competitive inhibitor of squalene epoxidase from *Candida*, with a K<sub>i</sub> of 30 nM. Terbinafine also shows antibacterial activity against certain Gram-positive and Gram-negative bacteria<sup>[1][2][3]</sup>. Terbinafine is a click chemistry reagent, it contains an Alkyne group and can undergo copper-catalyzed azide-alkyne cycloaddition (CuAAC) with molecules containing Azide groups.

|                                     |   |
|-------------------------------------|---|
| <b>IC<sub>50</sub> &amp; Target</b> | Ki: 30 nM (squalene epoxidase) <sup>[1]</sup>   |
| <b>In Vitro</b>                     | Terbinafine has a primary fungicidal action in vitro against most fungal pathogens, including dermatophytes, and dimorphic and filamentous fungi. Terbinafine specifically inhibits fungal ergosterol biosynthesis at the point of squalene epoxidation. The treated fungal cells rapidly accumulate tlic intermediate squalene <sup>[1]</sup> .<br>MCE has not independently confirmed the accuracy of these methods. They are for reference only. |
| <b>In Vivo</b>                      | Terbinafine is not only active after topical application but is very effective in experimental dermatophytoses following oral administration. In fungi infected guinea-pigs, the skin temperature dropps dramatically after the fourth treatment of terbinafine <sup>[2]</sup> .<br>MCE has not independently confirmed the accuracy of these methods. They are for reference only.   |

## PROTOCOL

### Animal Administration <sup>[2]</sup>

Guinea-pigs: The backs (lumbar regions) of guinea-pigs, which have been mechanically depilated, are infected with 0.1 mL Sabouraud's dextrose 2% broth containing 10<sup>6</sup> c.f.u. of Truhophyton mentagrophytes. The treatments commence 48 h post-inoculation. The test compounds (Terbinafine) are suspended in 2% tylose and Tween 80 and administered via a stomach tube once daily on 9 consecutive days, or dissolved in a mixture of polyethylene glycol 400 and etbanol and spread on the infected part ot the body in a volume of 0.4 mL with a Hrigalski spatula once daily for 1-7 consecutive days<sup>[2]</sup>.  
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

## CUSTOMER VALIDATION

- Nat Microbiol. 2024 Jan 15.
- Cancer Commun (Lond). 2021 Jul 16.
- Adv Sci (Weinh). 2023 Sep;10(27):e2206878.
- Cancer Res. 2022 Sep 2;82(17):3032-3044.
- Clin Transl Med. 2024 Feb;14(2):e1586.

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## REFERENCES

- [1]. Ryder NS, et al. Terbinafine: mode of action and properties of the squalene epoxidase inhibition. Br J Dermatol. 1992 Feb;126 Suppl 39:2-7.
- [2]. Mieth H, et al. Preclinical evaluation of terbinafine in vivo. Clin Exp Dermatol. 1989 Mar;14(2):104-7.
- [3]. Ciftci E, et al. Mupirocin vs terbinafine in impetigo.Indian J Pediatr. 2002 Aug;69(8):679-82.

**Caution: Product has not been fully validated for medical applications. For research use only.**

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