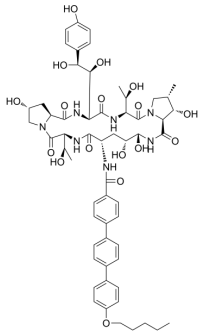
Anidulafungin



Cat. No.:	HY-13553
CAS No.:	166663-25-8
Molecular Formula:	$C_{58}H_{73}N_7O_{17}$
Molecular Weight:	1140.24
Target:	Fungal; Antibiotic
Pathway:	Anti-infection
Storage:	Powder -20°C 3 years 4°C 2 years In solvent -80°C 1 year -20°C 6 months

SOLVENT & SOLUBILITY

In Vitro

DMSO : ≥ 100 mg/mL (87.70 mM)

* "≥" means soluble, but saturation unknown.

Preparing Stock Solutions

Solvent / Mass / Concentration	1 mg	5 mg	10 mg
1 mM	0.8770 mL	4.3850 mL	8.7701 mL
5 mM	0.1754 mL	0.8770 mL	1.7540 mL
10 mM	0.0877 mL	0.4385 mL	0.8770 mL

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

In Vivo

1. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.5 mg/mL (2.19 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Anidulafungin is a new semisynthetic echinocandin with antifungal potency.

IC_{50} & Target

Antifungal[1]

In Vitro

Anidulafungin (LY-303366) has MICs of ≤0.32 μg/mL for all Candida albicans (n=99), Candida glabrata (n=18), and Candida tropicalis (n=10) isolates tested. Anidulafungin is also active against Aspergillus species (minimum effective concentration at which 90% of the isolates are inhibited, 0.02 μg/mL) (n=20), is less active against Candida parapsilosis (MIC at which 90% of the isolates are inhibited [MIC90], 5.12 μg/mL) (n=10), and is inactive against C. neoformans (MIC90 >10.24 μg/mL) (n=15) and B. dermatitidis (MIC90, 16 μg/mL) (n=29).The MICs of Fluconazole for three strains of C. tropicalis, seven strains of C. glabrata, and two strains of Candida krusei are ≥16 μg/mL. The MICs of Anidulafungin for 11 of these 12 strains range from 0.08 to 0.32 mg/mL. The twelfth strain is a C. krusei strain (Fluconazole MIC, 32 μg/mL) for which the Anidulafungin MIC is

1.28 mg/mL. The MIC at which 90% of the isolates are inhibited (MIC90) for these 12 strains is 0.32 μg/mL. The Anidulafungin MIC90 for the remaining 18 C. glabrata isolates and C. tropicalis isolates for which the Fluconazole MICs are ≥ 8 μg/mL is also 0.32 mg/mL. Anidulafungin appeares equally active against Candida species for which the fluconazole MICs are ≥16 mg/mL and against those for which the fluconazole MICs are ≥ 8 μg/mL. Anidulafungin has significantly less activity against C. neoformans and B. dermatitidis than against C. albicans, C. glabrata, and C. tropicalis. Ketoconazole and amphotericin B are the most active antifungal agents tested for both C. neoformans and B. dermatitidis. Anidulafungin demonstrated potent in vitro activity against Aspergillus species with a MEC90 of 0.02 μg/mL. MICs of Anidulafungin for the control strain yeast isolates are 0.02 μg/mL for C. albicans ATCC 90028, 0.16 mg/mL for C. glabrata ATCC 90030, and >10.24 μg/mL for C. neoformans ATCC 90112[1]. Strains selected with CD101 that have a 2-fold or greater CD101 MIC increase also have at least a 2-fold MIC increase for Anidulafungin (ANF) and/or Caspofungin (CSF)[2].

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

PROTOCOL

Cell Assay [2]

Stocks of CD101 (formerly SP 3025, biafungin, AF-025) are prepared fresh in 100% DMSO prior to use. The comparator antifungals Anidulafungin (ANF), Caspofungin (CSF), and Amphotericin B (AMB) are also prepared in 100% DMSO. MIC assays are performed via broth microdilution in accordance with CLSI guidelines, with the exception that test compounds are made up at a 50× final assay concentration and 100 μL assay mixture volumes are used (2 μL added to 98 μL of broth containing cells at 0.5×10^3 to 2.5×10^3 CFU/mL). All MIC assays are run at least three times, and a representative data set is shown. Quality control (QC) is assessed throughout the study via comparison of MIC values derived for WT C. krusei strain ATCC 6258 for AMB, CSF, and ANF with previously reported CLSI 24-h broth microdilution QC ranges[2].

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

CUSTOMER VALIDATION

- Adv Sci (Weinh). 2022 Oct 18;e2203088.
- J Clin Microbiol. 2017 Jun;55(6):1883-1893.
- Mycoses. 2021 Mar;64(3):282-291.
- mSphere. 2020 Oct 28;5(5):e00821-20.
- mSphere. 2018 Nov 14;3(6). pii: e00547-18.

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REFERENCES

[1]. Zhanel GG, et al. In vitro activity of a new semisynthetic echinocandin, LY-303366, against systemic isolates of Candida species, Cryptococcus neoformans, Blastomyces dermatitidis, and Aspergillus species. Antimicrob Agents Chemother. 1997 Apr;41(4):863-5

[2]. Locke JB, et al. Characterization of In Vitro Resistance Development to the Novel Echinocandin CD101 in Candida Species. Antimicrob Agents Chemother. 2016 Sep 23;60(10):6100-7.

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