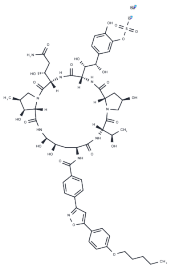
Data Sheet (Cat.No.T1794)

TargetMol

Micafungin sodium

Chemical Properties



CAS No. : 208538-73-2

Formula: C56H70N9NaO23S

Molecular Weight: 1292.26

Storage: Keep away from direct sunlight
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	Micafungin sodium (FK 463) is the sodium salt form of micafungin, a semi-synthetic echinocandin derived from a natural product of the fungus Coleophoma empetri with antifungal activity.
Targets(IC50)	Antibiotic,Antifungal
In vitro	Micafungin (10 mg/mL) effectively inhibits biofilm formation in the majority of examined isolates and significantly reduces mRNA transcription levels across all tested genes compared to untreated samples[1]. Additionally, when combined with KB425796-C, micafungin exhibits a fungicidal effect, significantly diminishing the colony-forming unit (CFU) count, unlike the fungistatic outcome (no CFU reduction) observed when either drug is applied independently[2].
In vivo	Micafungin administration at a dose of 1 mg/kg notably extends survival in mice compared to those receiving saline. Additionally, a regimen combining micafungin (0.1 mg/kg) with KB425796-C (32 mg/kg) appears to enhance survival duration when compared to treatment with only micafungin (0.1 mg/kg). Treatment with micafungin alone reduces colony-forming units (CFUs) in the liver, though its clearance efficacy is not as pronounced as in the kidney. Significantly, a combined treatment of micafungin and KB425796-C markedly lowers CFU counts across all tested doses compared to micafungin treatment alone, demonstrating a superior clearance effect than that seen with AMPH-treated animals[2].
Kinase Assay	HEK-GPR119 cells are transfected with GloSensor 22F plasmid and used for dynamic cAMP measurements 24-30 h later. Cell suspensions are made by dislodging the cells using PBS wash and Accutase treatment followed by resuspension in culture media. Cells are then washed twice by pelleting through centrifugation (300 g, 5 min) and resuspension in assay buffer (Hank's Balanced Salt Solution supplemented with 20 mM HEPES and 0.01% fatty acid free BSA, pH 7.4). Cells are then counted and diluted to 600,000 cells/mL in buffer, before GloSensor cAMP reagent is added (2% v/v) and equilibrated with the cells for 2 h at 20°C with periodic mixing. 50 µl/well of cells are added to white-bottomed 384 well plates (30,000 cells/well) in triplicate and baseline luminescence is measuring using an Envision plate-reader. 5 µL of MBX-2982 (serially diluted in DMSO and then diluted 1:100 in assay buffer to obtain ×10 concentrated solution) is manually added to the assay wells to achieve the stated final concentration. Plates are incubated at 20°C with luminescence read at regular intervals to detect

Kinase Assay	dynamic cAMP changes over time within the same wells. cAMP responses at each time-point are expressed as fold over control (vehicle-treated cells)[1].
Cell Research	Each fungal isolate is incubated statically in yeast-maltose (YM) agar broth for 24?h at 30°C.?Cryptococcus neoformans?YC203 is grown in YM broth medium for 20?h at 30°C with shaking at 200?r.p.m. A cell suspension is prepared by washing the cultured cells once with sterile saline.?A. fumigatus?FP1305 is cultured on a potato dextrose agar (PDA) slant for 4 days, and spores are then harvested in sterile saline and collected by filtering through gauze. Antifungal activity against all isolates, with the exception of C. neoformans, is measured by the micro-broth dilution method in 96-well culture plates using RPMI 1640 medium supplemented with?l-glutamine, but without sodium bicarbonate, and buffered to pH 7.0 with 0.165?m?MOPS. ForC. neoformans, yeast nitrogen base-glucose (YNBD) medium is used. For the assay, the test microorganism is inoculated into each well to yield 1×105?CFU/well, and the plates are then incubated for 20?h or 48?h at 37°C. Two end points are determined by microscopic observation: MEC, which is defined as a substantial reduction in fungal growth, and MIC, which is defined as a complete inhibition of growth.

Solubility Information

Solubility	Ethanol: < 1 mg/mL (insoluble or slightly soluble), DMSO: 242 mg/mL (187.27 mM),Sonication is recommended. H2O: 100 mg/mL (77.38 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: 5 mg/mL (3.87 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	0.7738 mL	3.8692 mL	7.7384 mL
5 mM	0.1548 mL	0.7738 mL	1.5477 mL
10 mM	0.0774 mL	0.3869 mL	0.7738 mL
50 mM	0.0155 mL	0.0774 mL	0.1548 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

Bazzi W, et al. The inhibitory effect of micafungin on biofilm formation by Pseudomonas aeruginosa. Biofouling. 2013 Jul 23.

Quan C, Chen Y, Wang X, et al. Loss of histone lysine methyltransferase EZH2 confers resistance to tyrosine kinase inhibitors in non-small cell lung cancer. Cancer Letters. 2020

Kai H, et al. Synergistic antifungal activity of KB425796-C in combination with micafungin against Aspergillus fumigat us and its efficacy in murine infection models. J Antibiot (Tokyo). 2013 Jun 12.

Tsang C C, Tang J Y M, Chan K F, et al. Diversity of phenotypically non-dermatophyte, non-Aspergillus filamentous fungi causing nail infections: importance of accurate identification and antifungal susceptibility testing. Emerging Microbes & Infections. 2019, 8(1): 531-541

Tsang C C, Tang J Y M, Ye H, et al. Rare/cryptic Aspergillus species infections and importance of antifungal susceptibility testing[J]. Mycoses. 2020, 63(12): 1283-1298.

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Diversity and Antifungal Susceptibilities of Yeasts from Mangroves in Hong Kong, China-A One Health Aspect

Tsang C C, Tang J Y M, Chan K F, et al. Diversity of phenotypically non-dermatophyte, non-Aspergillus filamentous fungi causing nail infections: importance of accurate identification and antifungal susceptibility testing[J]. Emerging microbes & infections. 2019;8(1):531-541.