产品名称：米卡芬净钠
产品别名：**Micafungin sodium**

生物活性：

Description	Micafungin sodium (FK 463 sodium) is an antifungal agent which inhibits 1, 3-beta-D-glucan synthesis.
In Vitro	Micafungin (10 mg/mL) phenotypicly decreases the formation of biofilm in most of the isolates. For all the genes tested, the levels of mRNA transcription are also decreased significantly in micafungin-treated samples cf. their untreated counterparts[1]. The combination of micafungin and KB425796-C is fungicidal and markedly reduces the number of CFU, in contrast to the fungistatic effects (no reduction in CFU) observed at all examined time points when each drug is used alone[2].
In Vivo	Micafungin (1 mg/kg) significantly prolongs survival compared with mice administered saline. Animals given a combination of micafungin (0.1 mg/kg) and KB425796-C (32 mg/kg) show a trend towards prolonged survival in comparison with those treated with micafungin (0.1 mg/kg) alone. In the livers of micafungin-treated mice, the number of CFUs decreases, although the clearance effect is less than that found in the kidneys. Combination treatment with micafungin and KB425796-C results in a significant decrease in the number of CFUs compared with the treatment with micafungin alone at all examined doses. The clearance effect associated with KB425796-C in combination with micafungin is greater than that observed in AMPH-treated animals[2].

Solvent&Solubility

In Vitro:

DMSO： ≥ 32 mg/mL (24.76 mM)

* "≥" means soluble, but saturation unknown.

Preparing Stock Solutions	Solvent / Mass / Concentration	1 mg	5 mg	10 mg
	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

*请根据产品在不同溶剂中的溶解度选择合适的溶剂配制储备液；一旦配成溶液，请分装保存，避免反复冻融造成的产品失效。

储备液的保存方式和期限：-80°C, 6 months; -20°C, 1 month。-80°C 储存时，请在 6 个月内使用，-20°C 储存时，请在 1 个月内使用。

In Vivo:

请根据您的实验动物和给药方式选择适当的溶解方案。以下溶解方案都请先按照 **In Vitro** 方式配制澄清的储备液，再依次添加助溶剂：

——为保证实验结果的可靠性，澄清的储备液可以根据储存条件，适当保存；体内实验的工作液，建议您现用现配，当天使用； 以下溶剂前显示的百分比是指该溶剂在您配制终溶液中的体积占比；如在配制过程中出现沉淀、析出现象，可以通过加热和/或超声的方式助溶

1.请依序添加每种溶剂： 10% DMSO→40% PEG300 →5% Tween-80 → 45% saline

Solubility: ≥ 2.5 mg/mL (1.93 mM); Clear solution

此方案可获得 ≥ 2.5 mg/mL (1.93 mM，饱和度未知) 的澄清溶液。

以 1 mL 工作液为例，取 100 μL 25.0 mg/mL 的澄清 DMSO 储备液加到 400 μL PEG300 中，混合均匀；向上述体系中加入 50 μL Tween-80，混合均匀；然后继续加入 450 μL 生理盐水定容至 1 mL。

2.请依序添加每种溶剂： 10% DMSO→ 90% (20% SBE-β-CD in saline)

Solubility: ≥ 2.5 mg/mL (1.93 mM); Clear solution

	此方案可获得 ≥ 2.5 mg/mL (1.93 mM，饱和度未知) 的澄清溶液。 以 1 mL 工作液为例，取 100 μL 25.0 mg/mL 的澄清 DMSO 储备液加到 900 μL 20% 的 SBE-β-CD 生理盐水水溶液中，混合均匀。 3.请依序添加每种溶剂： 10% DMSO →90% corn oil Solubility: ≥ 2.5 mg/mL (1.93 mM); Clear solution 此方案可获得 ≥ 2.5 mg/mL (1.93 mM，饱和度未知) 的澄清溶液，此方案不适用于实验周期在半个月以上的实验。 以 1 mL 工作液为例，取 100 μL 25.0 mg/mL 的澄清 DMSO 储备液加到 900 μL 玉米油中，混合均匀。
References	[1]. Bazzi W, et al. The inhibitory effect of micafungin on biofilm formation by Pseudomonas aeruginosa. Biofouling. 2013 Jul 23. [2]. 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.

实验参考：

Cell Assay	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 1×10^5CFU/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. [2]
Animal Administration	Eight groups of ten female DBA/2 mice (7 weeks old) are intravenously injected with 2.0×10^6 A. fumigatus FP1305 spores. The test groups receive the following treatments: AMPH at 1 mg/kg of body weight/dose given intraperitoneally (i.p.) once daily (q.d.); micafungin at 0.1, 0.32 or 1 mg/kg of body weight/dose given subcutaneously (s.c.) (q.d.); micafungin given s.c. (0.1, 0.32 or 1 mg/kgq.d.) plus KB425796-C given i.p. (32 mg/kg) twice daily (b.i.d.); and saline (b.i.d.). Drugs are administered on days 1 and 2. Five mice in each group are killed 1 day after the completion of treatment. The livers and kidneys are aseptically removed, and each organ is then homogenized in 5 mL sterile saline. Serial 10-fold dilutions of the homogenates are plated on PDA and incubated for 48 h at 37°C, and the numbers of CFU per gram of tissue are then calculated. The survival rate of remaining five mice of each group are examined daily for 31 days after the challenge. [2]
References	[1]. Bazzi W, et al. The inhibitory effect of micafungin on biofilm formation by Pseudomonas aeruginosa. Biofouling. 2013 Jul 23. [2]. 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.