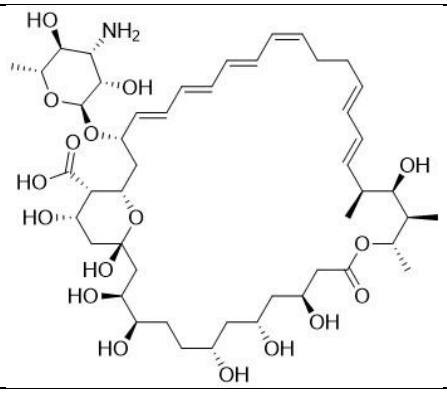
Product data sheet

MedKoo Cat#: 326754 Name: Nystatin CAS#: 1400-61-9 Chemical Formula: $C_{47}H_{75}NO_{17}$ Exact Mass: 925.5035 Molecular Weight: 926.11	
Product supplied as:	Powder
Purity (by HPLC):	≥ 98%
Shipping conditions	Ambient temperature
Storage conditions:	Powder: -20°C 3 years; 4°C 2 years.
	In solvent: -80°C 3 months; -20°C 2 weeks.

1. Product description:

Nystatin is a polyene antifungal, the antibiotic complex containing three biologically active components: A1, A2, and A3. Nystatin is used to treat fungal infections of the skin, mouth, vagina, and intestinal tract. Fungal medicines will not work for colds, flu, or other viral infections. Nystatin binds to ergosterol, a major component of the fungal cell membrane. When present in sufficient concentrations, it forms pores in the membrane that lead to K+ leakage, acidification, and death of the fungus. Ergosterol is unique to fungi, so the drug does not have such catastrophic effects on animals or plants. However, many of the systemic/toxic effects of nystatin are attributable to its effect on human cells via binding to mammalian sterols, namely cholesterol. This is the effect that accounts for the nephrotoxicity observed when high serum levels of nystatin are achieved.

2. CoA, QC data, SDS, and handling instruction

SDS and handling instruction, CoA with copies of QC data (NMR, HPLC and MS analytical spectra) can be downloaded from the product web page under "QC And Documents" section. Note: copies of analytical spectra may not be available if the product is being supplied by MedKoo partners. Whether the product was made by MedKoo or provided by its partners, the quality is 100% guaranteed.

3. Solubility data

Solvent	Max Conc. mg/mL	Max Conc. mM
DMSO	50.0	54.0

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	1.08	5.40	10.80
5 mM	0.22	1.08	2.16
10 mM	0.11	0.54	1.08
50 mM	0.02	0.11	0.22

5. Molarity Calculator, Reconstitution Calculator, Dilution Calculator

Please refer the product web page under section of "Calculator"

6. Recommended literature which reported protocols for in vitro and in vivo study

In vitro study

1. Najafi S, Sheykhbahaei N, Khayamzadeh M, Gholizadeh N. The effect of low level laser on number of Candida albicans colonies in-vitro: a new finding. BMC Oral Health. 2019 Jun 13;19(1):104. doi: 10.1186/s12903-019-0814-5. PMID: 31196043; PMCID: PMC6567648.

2. Najafi S, Sheykhbahaei N, Khayamzadeh M, Gholizadeh N. The effect of low level laser on number of Candida albicans colonies in-vitro: a new finding. BMC Oral Health. 2019 Jun 13;19(1):104. doi: 10.1186/s12903-019-0814-5. PMID: 31196043; PMCID: PMC6567648.

In vivo study

1. Wallace TL, Paetznick V, Cossum PA, Lopez-Berestein G, Rex JH, Anaissie E. Activity of liposomal nystatin against disseminated Aspergillus fumigatus infection in neutropenic mice. Antimicrob Agents Chemother. 1997 Oct;41(10):2238-43. doi: 10.1128/AAC.41.10.2238. PMID: 9333054; PMCID: PMC164099.

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2. Song R, Yan F, Cheng M, Dong F, Lin Y, Wang Y, Song B. Ultrasound-Assisted Preparation of Exopolysaccharide/Nystatin Nanoemulsion for Treatment of Vulvovaginal Candidiasis. Int J Nanomedicine. 2020 Mar 25;15:2027-2044. doi: 10.2147/IJN.S241134. PMID: 32273700; PMCID: PMC7104221.

7. Bioactivity

Biological target:

Nystatin is a polyene antifungal antibiotic effective against yeast and mycoplasma.

In vitro activity

We investigated the in vitro activity of nystatin and liposomal nystatin against 103 Candida isolates to determine the effect of both time and medium on MICs. We also compared the nystatin MICs with those of amphotericin B and fluconazole. Nystatin MICs in RPMI-2 were in general similar to or slightly higher than those in RPMI at both 24 and 48 h. Nystatin MIC ranges in RPMI and RPMI-2 were similarly wide for all species other than C. glabrata. AM3 consistently generated the highest nystatin MICs at both 24 and 48 h. This effect resulted in a wide nystatin MIC range in AM3, with a shift toward higher MICs. Amphotericin B MICs for five isolates in the group of randomly selected clinical isolates were also found to be $\geqslant$0.25 μ g/ml. This made a total of nine isolates which were putatively amphotericin B resistant. Relatively higher nystatin and liposomal nystatin MICs were associated with increased amphotericin B MICs. However, MICs of nystatin for the isolates that were putatively resistant to amphotericin B (MIC, $\geqslant$ 0.25 μg/ml) (2, 28) were not always elevated (Table3). While nystatin and liposomal nystatin MICs for two (Y537 and MY1012) and three (CL2887, Y537, and MY1012) of the nine amphotericin B-resistant isolates, respectively, were high (4 to >16 μg/ml), the remaining seven and six isolates, respectively, yielded nystatin and liposomal nystatin MICs that were lower than the MIC90 for the overall population of the corresponding drug.

J Clin Microbiol. 2002 Apr; 40(4): 1406–1412. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC140327/

In vivo activity

The purpose of this study was to examine the activity of liposomal nystatin against a disseminated Aspergillus fumigatus infection in neutropenic mice. Mice were made neutropenic with 5-fluorouracil and were administered the antifungal drug intravenously for 5 consecutive days beginning 24 h following infection. Liposomal nystatin, at doses as low as 2 mg/kg of body weight/day, protected neutropenic mice against Aspergillus-induced death in a statistically significant manner at the 50-day time point compared to either the no-treatment, the saline, or the empty-liposome group. This protection was approximately the same as that for free nystatin, a positive control. Histopathological results showed that liposomal nystatin cleared the lungs, spleen, pancreas, kidney, and liver of Aspergillus and that there was no organ damage at the day 5 time point, which was after only three doses of liposomal nystatin. Based on these results in mice, it is probable that liposomal nystatin will be effective against Aspergillus infection in humans.

Antimicrob Agents Chemother. 1997 Oct;41(10):2238-43. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC164099/pdf/412238.pdf

Note: The information listed here was extracted from literature. MedKoo has not independently retested and confirmed the accuracy of these methods. Customer should use it just for a reference only.