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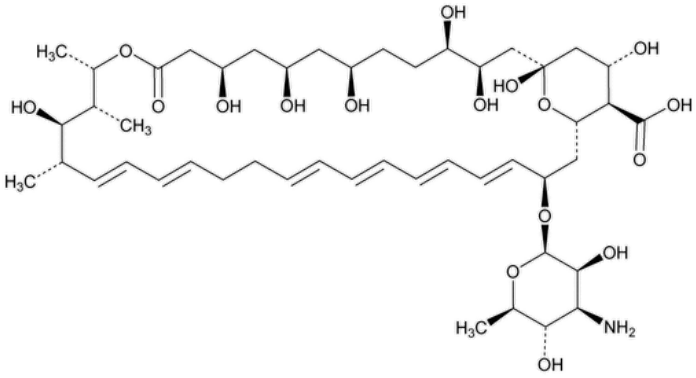
Nystatin

Change to read:



$C_{47}H_{75}NO_{17}$ ▲926.11▲ (USP 1-Dec-2022)

Nystatin A;
14,39-Dioxabicyclo[33.3.1]nonatriaconta-19,21,25,27,29,31-hexaene-36-carboxylic acid, 33-[(3-amino-3,6-dideoxy-β-D-mannopyranosyl)oxy]-1,3,4,7,9,11,17,37-octahydroxy-15,16,18-trimethyl-13-oxo, (1*S*,3*R*,4*R*,7*R*,9*R*,11*R*,15*S*,16*R*,17*R*,18*S*,19*E*,21*E*,25*E*,27*E*,29*E*,31*E*,33*R*,35*S*,36*R*,37*S*)-; (1*S*,3*R*,4*R*,7*R*,9*R*,11*R*,15*S*,16*R*,17*R*,18*S*,19*E*,21*E*,25*E*,27*E*,29*E*,31*E*,33*R*,35*S*,36*R*,37*S*)-33-[(3-Amino-3,6-dideoxy-β-D-mannopyranosyl)oxy]-1,3,4,7,9,11,17,37-octahydroxy-15,16,18-trimethyl-13-oxo-14,39-dioxabicyclo[33.3.1]nonatriaconta-19,21,25,27,29,31-hexaene-36-carboxylic acid CAS RN®: 1400-61-9; UNII: BDF1O1C72E.

DEFINITION

Nystatin is a substance or a mixture of two or more substances produced by the growth of *Streptomyces noursei* Brown et al. (Family Streptomycetaceae). It has a potency of NLT 4400 USP Nystatin Units/mg or, where intended for use in the extemporaneous preparation of oral suspensions, NLT 5000 USP Nystatin Units/mg.

IDENTIFICATION

Change to read:

• **A.** ▲**Spectroscopic Identification Tests ⟨197⟩, *Infrared Spectroscopy*:** 197K▲ (USP 1-Dec-2022)

Add the following:

▲• **B.** The retention time of the major peak of the *Sample solution* corresponds to that of the *Standard solution*, as obtained in the test for *Composition*.▲ (USP 1-Dec-2022)

ASSAY

• **Procedure**

(See *Antibiotics—Microbial Assays ⟨81⟩*.)

Analysis: Proceed as directed in the chapter.

Acceptance criteria: NLT 4400 USP Nystatin Units/mg; where intended for use in the extemporaneous preparation of oral suspensions, NLT 5000 USP Nystatin Units/mg

SPECIFIC TESTS

Change to read:

• **Suspendability** (where packaged for use in the extemporaneous preparation of oral suspensions)

Analysis

1. Transfer about 200 mg ▲of nystatin▲ (USP 1-Dec-2022) , accurately weighed, to a 250-mL beaker containing 200.0 mL of water, and disperse by stirring gently with a stirring rod. Allow to stand for 2 min, and observe the suspension.
2. If there is any sediment, assay the undisturbed suspension as directed for Nystatin in *Antibiotics—Microbial Assays* ⟨81⟩, using a suitable aliquot blended in a high-speed blender for 3–5 min with a sufficient volume of dimethylformamide to obtain a solution having a concentration of 400 USP Nystatin Units/mL. Dilute this stock solution quantitatively with *Buffer B.6* to obtain a test dilution having a nystatin concentration assumed to be equal to the median level of the standard.

Acceptance criteria

1. The material is in suspension, and little or no sediment is present on the bottom of the beaker.
2. If there is any sediment, the undisturbed suspension contains NLT 90.0% of the expected number of USP Nystatin Units, based on the potency obtained in the *Assay*.

- **Crystallinity** ⟨695⟩(where packaged for use in the extemporaneous preparation of oral suspensions)**:** Meets the requirements
- **pH** ⟨791⟩

Sample: 3% aqueous suspension

Acceptance criteria: 6.0–8.0

- **Loss on Drying** ⟨731⟩

Sample: 100 mg

Analysis: Dry the *Sample* in a capillary-stoppered bottle under vacuum at a pressure not exceeding 5 mm of mercury at 60° for 3 h.

Acceptance criteria: NMT 5.0%

- **Composition**

Solution A: Acetonitrile and 0.05 M ammonium acetate (29:71)

Solution B: Acetonitrile and 0.05 M ammonium acetate (60:40)

Mobile phase: See *Table 1*.

Table 1

Time (min)	Solution A (%)	Solution B (%)
0	100	0
25	100	0
35	0	100
40	0	100
45	100	0
50	100	0

System suitability solution: Dissolve 20 mg of Nystatin in 25 mL of methanol, and dilute with water to 50 mL. To 10.0 mL of the resulting solution add 2.0 mL of dilute hydrochloric acid, and allow to stand at room temperature for 1 h.

Standard solution: 0.4 mg/mL of USP Nystatin RS in dimethyl sulfoxide. Protect this solution from light, store refrigerated, and use within 24 h.

Sample solution: 0.4 mg/mL of Nystatin in dimethyl sulfoxide. Protect this solution from light, store refrigerated, and use within 24 h.

Chromatographic system

(See *Chromatography* ⟨621⟩, *System Suitability*.)

Mode: LC

Detector: UV 304 nm

Column: 4.6-mm × 15-cm; base-deactivated, end-capped 5-µm packing L1

Column temperature: 30°

Flow rate: 1 mL/min

Injection volume: 20 µL

System suitability

Samples: *System suitability solution* and *Standard solution*

[NOTE—The nystatin A1 peak elutes at 14 min. Identify this peak using the *Standard solution*.]

Suitability requirements

Resolution: NLT 3.5 between the two major peaks, *System suitability solution*

Analysis

Sample: *Sample solution*

Calculate the percentage of each peak:

$$\text{Result} = (r_U/r_T) \times 100$$

r_U = area of each individual peak

r_T = total area of all peaks except those eluting in less than 2 min

Acceptance criteria: NLT 85.0% of nystatin A1; NMT 4.0% of any other individual component. Disregard any peaks eluting in less than 2 min.

ADDITIONAL REQUIREMENTS

- **PACKAGING AND STORAGE:** Preserve in tight, light-resistant containers.
- **LABELING:** Where packaged for use in the extemporaneous preparation of oral suspensions, the label so states.
- **USP REFERENCE STANDARDS** ⟨11⟩
  USP Nystatin RS

Auxiliary Information - Please check for your question in the FAQs before contacting USP.

Topic/Question	Contact	Expert Committee
NYSTATIN	Ying Han Associate Science & Standards Liaison	BIO42020 Biologics Monographs 4 - Antibiotics
REFERENCE STANDARD SUPPORT	RS Technical Services RSTECH@usp.org	BIO42020 Biologics Monographs 4 - Antibiotics

Chromatographic Database Information: Chromatographic Database

Most Recently Appeared In:
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