Neomycin Sulfate and Dexamethasone Sodium Phosphate Cream

DEFINITION

Neomycin Sulfate and Dexamethasone Sodium Phosphate Cream contains the equivalent of NLT 90.0% and NMT 135.0% of the labeled amount of neomycin, and the equivalent of NLT 90.0% and NMT 110.0% of the labeled amount of dexamethasone phosphate ($C_{22}H_{30}FO_8P$).

IDENTIFICATION

- **A. THIN-LAYER CHROMATOGRAPHIC IDENTIFICATION TEST ⟨201BNP⟩:** Meets the requirements for neomycin

Delete the following:

- **B. THIN-LAYER CHROMATOGRAPHY**
  Buffer: 3.1 g/L of boric acid, 203 mg/L of magnesium chloride, and 860 mg/L of sodium hydroxide in water
  Solution A: 1 mg/mL alkaline phosphatase enzyme in *Buffer*
  Standard solution: 300 µg/mL of USP Dexamethasone RS in methylene chloride
  Sample stock solution: Use the *Sample solution* prepared as directed in the *Assay* for *Dexamethasone Phosphate*.
  Sample solution: Add 5 mL of *Solution A* to a glass stoppered 50-mL tube containing 5 mL of the *Sample stock solution*, incubate at 37° for 45 min, then add 25 mL of methylene chloride, and shake for 2 min. Evaporate 15 mL of the methylene chloride extract on a steam bath to dryness, and dissolve the residue in 1 mL of methylene chloride.
  Chromatographic system
  (See *Chromatography ⟨621⟩, Thin-Layer Chromatography*.)
  Adsorbent: 0.25-mm layer of chromatographic silica gel
  Application volume: 5 µL
  Developing solvent system: Chloroform, acetone, and water (50:50:1)
  Spray reagent: Dilute sulfuric acid (1 in 2)
  Analysis
  Samples: *Standard solution* and *Sample solution*
  Apply the *Standard solution* and the *Sample solution* to the thin-layer chromatographic plate and allow the spots to dry. Develop the chromatogram using the *Developing solvent system* in a tank completely lined with filter paper, until the solvent front has moved about three-fourths of the length of the plate. Remove the plate from the developing tank, mark the solvent front, and allow the spots to dry. Spray the plate with *Spray reagent*, and heat at 105° until brown or black spots appear.
  Acceptance criteria: The R_F value of the principal spot from the *Sample solution* corresponds to that from the *Standard solution*. • (IRA 1-May-2015)

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 *Assay* for *Dexamethasone Phosphate*. • (IRA 1-May-2015)

ASSAY

- **NEOMYCIN**
  (See *Antibiotics—Microbial Assays ⟨81⟩*.)
  Sample solution: Shake a portion of Cream, containing nominally 1.75 mg of neomycin, with 50 mL of ether, and extract with four 20-mL portions of *Buffer B.3*. Combine the aqueous extracts, and dilute with *Buffer B.3* to a suitable volume.
  Analysis: Proceed as directed in the chapter. Dilute the *Sample solution* with *Buffer B.3* to obtain a *Test Dilution* with a neomycin concentration that is nominally equivalent to the median level of the standard.
  Acceptance criteria: 90.0%–135.0%

Change to read:

- **DEXAMETHASONE PHOSPHATE**
  Solution A: 6.9 g/L of monobasic sodium phosphate
  Mobile phase: Methanol and *Solution A* (52:48)
  Diluent: Dissolve 0.29 g of dibasic sodium phosphate in 450 mL of water, and add 550 mL of alcohol.
  Standard solution: •33 µg/mL of USP Dexamethasone Sodium Phosphate RS• (IRA 1-May-2015) in *Diluent*. Prepare this solution freshly.
  Sample solution: Nominally 30 µg/mL of dexamethasone phosphate from Cream in *Diluent*, prepared as follows. Transfer a portion of Cream, containing nominally 3 mg of dexamethasone phosphate, to a suitable beaker. Add 65 mL of *Diluent*, and heat just to boiling. Pour the contents of the beaker into a separatory funnel containing 45 mL of isooctane. After shaking for 1 min, decant the lower layer into a 100-mL volumetric flask. Rinse the beaker with two 15-mL portions of *Diluent*, add each to the separatory funnel, shake, and decant the lower layer from each extraction into the 100-mL volumetric flask. Dilute with *Diluent* to volume, and mix. Pass through a suitable filter.
  Chromatographic system
  (See *Chromatography ⟨621⟩, System Suitability*.)
  Mode: LC
  Detector: UV 254 nm
  Column: •3.9-mm × 30-cm; 10-µm• (IRA 1-May-2015) packing L1
  Flow rate: 1.5 mL/min
  Injection volume: 20 µL
  System suitability
  Sample: *Standard solution*
  [NOTE—The retention time for dexamethasone phosphate is about 8.5 min.]
  Suitability requirements
  Relative standard deviation: NMT 1.5%
  Analysis
  Samples: *Standard solution* and *Sample solution*
  Calculate the percentage of the labeled amount of dexamethasone phosphate ($C_{22}H_{30}FO_8P$) in the portion of Cream taken:

$$\text{Result} = (r_U/r_S) \times (C_S/C_U) \times (M_{r1}/M_{r2}) \times 100$$ • (IRA 1-May-2015)

r_U = peak response from the *Sample solution*
r_S = peak response from the *Standard solution*
C_S = concentration of •USP Dexamethasone Sodium Phosphate RS• (IRA 1-May-2015) in the *Standard solution* (µg/mL)

C_U = nominal concentration of dexamethasone phosphate in the *Sample solution* (µg/mL)
M_{r1} = molecular weight of dexamethasone phosphate, 472.44
M_{r2} = molecular weight of dexamethasone sodium phosphate, 516.40 • (IRA 1-May-2015)

Acceptance criteria: 90.0%–110.0%

PERFORMANCE TESTS

• **MINIMUM FILL** ⟨755⟩**:** Meets the requirements

ADDITIONAL REQUIREMENTS

• **PACKAGING AND STORAGE:** Preserve in collapsible tubes or in tight containers.

Change to read:

• **USP REFERENCE STANDARDS** ⟨11⟩
•USP Dexamethasone Sodium Phosphate RS • (IRA 1-May-2015)
USP Neomycin Sulfate RS