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 (C₂₂H₃₀FO₈P).

**IDENTIFICATION**
- **A. THIN-LAYER CHROMATOGRAPHIC IDENTIFICATION TEST**
  (2018BNP): 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うこと 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
- **NEOMICYN**
  (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 500 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 isoctane. 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 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 8.3 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 (C₂₂H₃₀FO₈P) in the portion of Cream taken:
  \[ \text{Result} = \left( \frac{r_s}{r_u} \right) \times \left( \frac{C_u}{C_s} \right) \times \left( \frac{M_s}{M_u} \right) \times 100 \] (IRA 1-May-2015)

  \[ r_u = \text{peak response from the Standard solution} \]
  \[ r_s = \text{peak response from the Sample solution} \]
  \[ C_s = \text{concentration of USP Dexamethasone Sodium Phosphate RS} \] (IRA 1-May-2015) in the Standard solution (µg/mL)
Neomycin

\[ C_U = \text{nominal concentration of dexamethasone phosphate in the Sample solution (µg/mL)} \]

\[ M_1 = \text{molecular weight of dexamethasone phosphate, 472.44} \]

\[ M_2 = \text{molecular weight of dexamethasone sodium phosphate, 516.40} \]

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
  - USP Neomycin Sulfate RS

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