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Sulfacetamide Sodium Ophthalmic Ointment

DEFINITION

Sulfacetamide Sodium Ophthalmic Ointment contains NLT 90.0% and NMT 110.0% of the labeled amount of sulfacetamide sodium ($C_8H_9N_2NaO_3S \cdot H_2O$). It is sterile.

IDENTIFICATION

- **A.**

  Sample: Nominally 1 g of sulfacetamide sodium from a quantity of Ophthalmic Ointment

  Analysis: Dissolve the *Sample* in 100 mL of ether in a separator, and extract the mixture with 25 mL of water. Wash the extract with 25 mL of ether, and warm the water extract on a steam bath to remove the last traces of ether. Adjust with 6 N acetic acid to a pH of 4–5, and filter. Wash the precipitate with water, and dry at 105° for 2 h. Use the precipitate in *Identification B*, *C*, and *D*.

  Acceptance criteria: The sulfacetamide melts at 180°–184°.

- **B.**

  Sample: 500 mg of the sulfacetamide from *IdentificationA*

  Analysis: Place the *Sample* in a test tube, and heat gently until it boils.

  Acceptance criteria: An oily liquid, which has the characteristic odor of acetamide, condenses on the walls of the test tube (distinction from the sublimates of sulfadiazine, sulfamerazine, and sulfamethazine, which are solids at room temperature).

- **C.**

  Sample solution: 100 mg of the sulfacetamide from *IdentificationA* in 5 mL of water

  Analysis: Add 5 drops of cupric sulfate TS to the *Sample solution*.

  Acceptance criteria: A light bluish-green precipitate is formed, and it remains unchanged on standing.

- **D.**

  Sample solution: 500 mg of the sulfacetamide from *IdentificationA* in 10 mL of dilute hydrochloric acid (1 in 10)

  Analysis 1: To about one-half of the *Sample solution* add 2 mL of trinitrophenol TS.

  Acceptance criteria 1: A very heavy flocculent or almost gelatinous precipitate is formed.

  Analysis 2: To the remainder of the *Sample solution* add 3 drops of formaldehyde TS.

  Acceptance criteria 2: A white precipitate is formed, and it changes to orange on standing (distinction from sulfamethoxypyridazine).

ASSAY

- **Procedure**

  Diluent: 20% methanol

  Mobile phase: Methanol, glacial acetic acid, and water (10:1:89)

  Standard stock solution: 5 mg/mL of USP Sulfacetamide Sodium RS prepared as follows. Transfer 50 mg of USP Sulfacetamide Sodium RS to a 40-mL centrifuge tube. Add 10.0 mL of *Diluent*, insert the stopper, and mix using a vortex mixer for 3 min to dissolve the Reference Standard. Add 7.5 mL of heptane, insert the stopper, and mix using a vortex mixer for another 3 min. Centrifuge to effect separation of the phases. Withdraw, and discard the upper heptane layer.

  Standard solution: 0.03 mg/mL of USP Sulfacetamide Sodium RS in *Diluent* from the *Standard stock solution*

  System suitability solution: 0.03 mg/mL of sulfanilamide in the *Standard solution*

  Sample stock solution: Nominally 5 mg/mL of sulfacetamide sodium prepared as follows. Transfer 100 mg of sulfacetamide sodium from a quantity of Ophthalmic Ointment to a 40-mL centrifuge tube. Add 15.0 mL of heptane, insert the stopper, and mix using a vortex mixer for 3 min to dissolve the Ophthalmic Ointment. Add 20.0 mL of *Diluent*, insert the stopper, and mix using a vortex mixer for 3 min. Centrifuge to effect separation of the phases. Withdraw, and discard the upper heptane layer.

  Sample solution: Nominally 0.03 mg/mL of sulfacetamide sodium in *Diluent* from the *Sample stock solution*

  Chromatographic system

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

  Mode: LC

Detector: UV 254 nm

Column: 4.6-mm × 25-cm; packing L1

Flow rate: 1.5 mL/min

Injection volume: 90 µL

System suitability

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

Suitability requirements

Resolution: NLT 3 between the sulfacetamide and sulfanilamide peaks, *System suitability solution*

Column efficiency: NLT 1500 theoretical plates, determined from the analyte peak, *Standard solution*

Relative standard deviation: NMT 2.0%, *Standard solution*

Analysis

Samples: *Standard solution* and *Sample solution*

Calculate the percentage of the labeled amount of sulfacetamide sodium ($C_8H_9N_2NaO_3S \cdot H_2O$) in the portion of Ophthalmic Ointment taken:

$$\text{Result} = (r_U/r_S) \times (C_S/C_U) \times (M_{r1}/M_{r2}) \times 100$$

r_U = peak response from the *Sample solution*

r_S = peak response from the *Standard solution*

C_S = concentration of USP Sulfacetamide Sodium RS, calculated on the anhydrous basis, in the *Standard solution* (mg/mL)

C_U = nominal concentration of sulfacetamide sodium in the *Sample solution* (mg/mL)

M_{r1} = molecular weight of sulfacetamide sodium monohydrate, 254.24

M_{r2} = molecular weight of anhydrous sulfacetamide sodium, 236.23

Acceptance criteria: 90.0%–110.0%

SPECIFIC TESTS

• **Sterility Tests ⟨71⟩:** Meets the requirements

• **Other Requirements:** It meets the requirements for *Particulate and Foreign Matter* in *Ophthalmic Products—Quality Tests ⟨771⟩, Drug Product Quality, Universal Tests, Particulate and Foreign Matter.*

ADDITIONAL REQUIREMENTS

• **Packaging and Storage:** Preserve in collapsible ophthalmic ointment tubes.

• **USP Reference Standards ⟨11⟩**

USP Sulfacetamide Sodium RS

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

Topic/Question	Contact	Expert Committee
SULFACETAMIDE SODIUM OPHTHALMIC OINTMENT	Documentary Standards Support	SM12020 Small Molecules 1
REFERENCE STANDARD SUPPORT	RS Technical Services RSTECH@usp.org	SM12020 Small Molecules 1

Chromatographic Database Information: Chromatographic Database

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