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Mesalamine Rectal Suspension

DEFINITION

Mesalamine Rectal Suspension is a suspension of Mesalamine in a suitable aqueous vehicle. It contains NLT 90.0% and NMT 110.0% of the labeled amount of mesalamine ($C_7H_7NO_3$). It contains one or more suitable preservatives.

IDENTIFICATION

• **A.** The retention time of the major peak of the *Sample solution* corresponds to that of the *Standard solution,* as obtained in the *Assay*.

ASSAY

• **Procedure**

Buffer: Transfer 7.1 g of anhydrous dibasic sodium phosphate and 6.9 g of monobasic sodium phosphate to a 1000-mL volumetric flask, add 500 mL of water, and swirl to dissolve. Add 7.5 mL of a solution of tetrabutylammonium hydroxide in methanol (1 in 4), dilute with water to volume, and mix.

Mobile phase: Methanol and *Buffer* (15:85)

System suitability solution: 0.25 mg/mL of 4-aminosalicylic acid and 0.4 mg/mL of USP Mesalamine RS in *Mobile phase*

Standard stock solution: 1 mg/mL of USP Mesalamine RS in *Mobile phase*

Standard solution: 0.4 mg/mL of USP Mesalamine RS in *Mobile phase* from the *Standard stock solution*

Sample solution: Transfer an accurately measured, well-shaken quantity of Rectal Suspension, nominally equivalent to about 100 mg of mesalamine, to a 100-mL volumetric flask. Add 55 mL of *Mobile phase,* and dissolve by shaking for about 10 min. Dilute with *Mobile phase* to volume, and mix. Transfer 10.0 mL of this solution to a 25-mL volumetric flask, dilute with *Mobile phase* to volume, and mix. Pass this solution through a suitable filter of 0.5-µm or finer pore size, and use the filtrate as the *Sample solution.*

Chromatographic system

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

Mode: LC

Detector: UV 254 nm

Column: 4-mm × 30-cm; packing L1

Flow rate: 2 mL/min

Injection volume: 15 µL

System suitability

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

Suitability requirements

Resolution: NLT 2.0 between 4-aminosalicylic acid and mesalamine, *System suitability solution*

Tailing factor: NMT 2.5, *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 mesalamine ($C_7H_7NO_3$) in the portion of Rectal Suspension taken:

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

r_U = peak response of mesalamine from the *Sample solution*

r_S = peak response of mesalamine from the *Standard solution*

C_S = concentration of USP Mesalamine RS in the *Standard solution* (mg/mL)

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

Acceptance criteria: 90.0%–110.0%

OTHER COMPONENTS

• **Content of Sodium Benzoate** (if present)

Mobile phase: Transfer 390 mg of ammonium acetate to a 1000-mL volumetric flask, add 100 mL of water, and dissolve by swirling. Add 6 mL of glacial acetic acid and 300 mL of methanol, dilute with water to volume, and mix. Pass this solution through a filter of 0.5-µm or finer

pore size.

Standard solution: 1 mg/mL of sodium benzoate in water. To 5.0 mL of this solution add 40 mL of methanol, and dilute with water to 100 mL. Pass this solution through a filter of 0.5-µm or finer pore size.

Sample solution: Transfer about 5 g of well-shaken Rectal Suspension to a 100-mL volumetric flask. Add 40 mL of methanol, dilute with water to volume, and mix. Pass the solution through a filter of 0.5-µm or finer pore size.

Chromatographic system

Mode: LC

Detector: UV 254 nm

Column: 4.6-mm × 25.0-cm; packing L7

Flow rate: 1.5 mL/min

Injection volume: 15 µL

System suitability

Sample: *Standard solution*

Suitability requirements

Tailing factor: NMT 2.5

Relative standard deviation: NMT 2.0%

Analysis

Samples: *Standard solution* and *Sample solution*

Calculate the percentage (w/w) of sodium benzoate in the Rectal Suspension taken:

$$\text{Result} = (r_U/r_S) \times C_S \times (10/W)$$

r_U = peak response of sodium benzoate from the *Sample solution*

r_S = peak response of sodium benzoate from the *Standard solution*

C_S = concentration of sodium benzoate in the *Standard solution* (mg/mL)

W = weight of Rectal Suspension taken (g)

Acceptance criteria: 0.05%–0.125%

PERFORMANCE TESTS

Change to read:

• **Uniformity of Dosage Units ⟨905⟩:** ▲Meets the requirements▲ (CN 1-Aug-2023)

Procedure for content uniformity

Buffer: Transfer 7.1 g of anhydrous dibasic sodium phosphate and 6.9 g of monobasic sodium phosphate to a 1000-mL volumetric flask, add 500 mL of water, and swirl to dissolve. Add 7.5 mL of a solution of tetrabutylammonium hydroxide in methanol (1 in 4), dilute with water to volume, and mix.

Mobile phase: Methanol and *Buffer* (15:85)

System suitability solution: 0.25 mg/mL of 4-aminosalicylic acid and 0.4 mg/mL of USP Mesalamine RS in *Mobile phase*

Standard stock solution: Transfer about 100 mg of USP Mesalamine RS to a 50-mL volumetric flask, add 15 mL of 2 N hydrochloric acid, and dissolve by swirling. Dilute with 2 N hydrochloric acid to volume, and mix.

Standard solution: Add 5 mL of 2 N sodium hydroxide to 5.0 mL of the *Standard stock solution*, and dilute with *Mobile phase* to 25 mL. Pass this solution through a filter of 0.5-µm or finer pore size.

Sample stock solution: Transfer, with the aid of 2 N hydrochloric acid, the contents of a container of Rectal Suspension to a 200-mL volumetric flask. Add 2 N hydrochloric acid to obtain about 160 mL of solution, and shake for 10 min. Dilute with 2 N hydrochloric acid to volume, and mix.

Sample solution: Transfer a suitable volume of the *Sample stock solution*, nominally equivalent to 40 mg of mesalamine, to a 100-mL volumetric flask. Add a volume of 2 N hydrochloric acid, equal to the added volume of the *Sample stock solution*, dilute with *Mobile phase* to volume, and mix. Pass this solution through a suitable filter of 0.5-µm or finer pore size.

Chromatographic system

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

Mode: LC

Detector: UV 254 nm

Column: 4-mm × 30-cm; packing L1

Flow rate: 2 mL/min

Injection volume: 15 µL

System suitability

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

Suitability requirements

Resolution: NLT 2.0 between 4-aminosalicylic acid and mesalamine, *System suitability solution*

Tailing factor: NMT 2.5, *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 mesalamine ($C_7H_7NO_3$) in the container of Rectal Suspension taken:

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

r_U = peak response of mesalamine from the *Sample solution*

r_S = peak response of mesalamine from the *Standard solution*

C_S = concentration of USP Mesalamine RS in the *Standard solution* (mg/mL)

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

▲▲ (CN 1-Aug-2023)

IMPURITIES

• **Organic Impurities**

Mobile phase: Dissolve 1.36 g of monobasic potassium phosphate and 2.2 g of sodium 1-octanesulfonate in 890 mL of water, and adjust with phosphoric acid to a pH of 2.2. Pass through a filter of 0.5-µm or finer pore size. To the filtrate add 80 mL of methanol and 30 mL of acetonitrile.

Standard solution: 1 µg/mL each of USP Mesalamine RS and 3-aminosalicylic acid in *Mobile phase*

Sample solution: Transfer a volume of Rectal Suspension, previously well shaken, nominally equivalent to 100 mg of mesalamine, to a beaker. Add water to give a volume of about 80 mL, and adjust with phosphoric acid to a pH of 2.0. Sonicate briefly to dissolve, transfer to a 100-mL volumetric flask, dilute with water to volume, and mix.

Chromatographic system

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

Mode: LC

Detector: UV 220 nm

Column: 4.6-mm × 15-cm; 5-µm packing L7

Flow rate: 1.2 mL/min

Injection volume: 20 µL

Run time: 3 times the retention time of mesalamine

System suitability

Sample: *Standard solution*

[Note—The relative retention times for mesalamine and 3-aminosalicylic acid are about 1.0 and 1.3, respectively.]

Suitability requirements

Resolution: NLT 2 between mesalamine and 3-aminosalicylic acid

Analysis

Samples: *Standard solution* and *Sample solution*

Calculate the percentage of each impurity in the portion of Rectal Suspension taken:

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

r_U = peak response of any individual impurity from the *Sample solution*

r_S = peak response of mesalamine from the *Standard solution*

C_S = concentration of USP Mesalamine RS in the *Standard solution* (µg/mL)

C_U = nominal concentration of mesalamine in the *Sample solution* (µg/mL)

Acceptance criteria

Individual impurities: NMT 0.2%

Total impurities: NMT 1.0%

SPECIFIC TESTS

• **pH ⟨791⟩**

Sample solution: Dilute the Rectal Suspension 1 to 10 with water.

Acceptance criteria: 3.5–5.5

ADDITIONAL REQUIREMENTS

• **Packaging and Storage:** Preserve in tight, light-resistant containers.

• **USP Reference Standards ⟨11⟩**

USP Mesalamine RS

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

Topic/Question	Contact	Expert Committee
MESALAMINE RECTAL SUSPENSION	Documentary Standards Support	SM22020 Small Molecules 2

Chromatographic Database Information: Chromatographic Database

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