Status: Currently Official on 16-Feb-2025
Official Date: Official as of 01-Dec-2024
Document Type: USP Monographs
DocId: GUID-911FAC3F-744A-405F-BC8D-17B7EE479426_2_en-US
DOI: https://doi.org/10.31003/USPNF_M49445_02_01
DOI Ref: l9t94

Add the following:

▲Mesalamine Suppositories

DEFINITION
Mesalamine Suppositories contain NLT 90.0% and NMT 110.0% of the labeled amount of mesalamine ($C_7H_7NO_3$).

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*.

• **B.** The UV spectrum of the major peak of the *Sample solution* corresponds to that of the *Standard solution*, as obtained in the *Assay*.

ASSAY
• **Procedure**

Buffer: Dissolve 1.39 g of potassium phosphate, monobasic and 2.24 g of octanesulfonic acid sodium salt, monohydrate in 1 L of water. Adjust with phosphoric acid to a pH of 2.2.

Mobile phase: Methanol, acetonitrile, and *Buffer* (90:35:1000)

Standard solution: 0.1 mg/mL of USP Mesalamine RS in *Mobile phase*. Sonicate to dissolve, if necessary.

Sample stock solution: Nominally 5 mg/mL of mesalamine in 0.1 N hydrochloric acid prepared as follows. Transfer Suppositories (NLT 5) to a suitable volumetric flask. Melt the Suppositories completely at 60°. Add 80% of the flask volume of preheated 0.1 N hydrochloric acid at 60°. Stir vigorously to avoid lump formation. [Note—About 20 min stirring time is suggested.] Sonicate for NLT 15 min with intermittent shaking. Cool to room temperature and dilute with 0.1 N hydrochloric acid to volume. Allow to settle and pass through a suitable filter of 0.45-µm pore size.

Sample solution: Nominally 0.1 mg/mL of mesalamine from the *Sample stock solution* in *Mobile phase*

Chromatographic system

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

Mode: LC

Detector: UV 220 nm. For *Identification B*, use a diode array detector in the range of 200–400 nm.

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

Column temperature: 30°

Flow rate: 2 mL/min

Injection volume: 20 µL

Run time: NLT 1.4 times the retention time of mesalamine

System suitability

Sample: *Standard solution*

Suitability requirements

Tailing factor: NMT 2.0

Relative standard deviation: NMT 1.0%

Analysis

Samples: *Standard solution* and *Sample solution*

Calculate the percentage of the labeled amount of mesalamine ($C_7H_7NO_3$) in the Suppositories 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%

PERFORMANCE TESTS

• **Dissolution ⟨711⟩**

Medium: Dissolve 27.22 g of potassium phosphate, monobasic and 6.5 g of sodium hydroxide in 1 L of water. Adjust with 50% (w/v) sodium hydroxide solution to a pH of 7.5; 900 mL

Apparatus 2: 125 rpm, with suitable sinker

Temperature: 40°

Time: 60 min

Buffer: Transfer 7.1 g of sodium phosphate, dibasic anhydrous and 6.9 g of sodium phosphate, monobasic (monohydrate) in a 1000-mL volumetric flask, and dissolve in 800 mL of water. Add 7.5 mL of tetrabutylammonium hydroxide, 25 percent in methanol, mix, and dilute with water to volume.

Mobile phase: Methanol and *Buffer* (30:70)

Standard solution: 0.11 mg/mL of USP Mesalamine RS in *Medium*. Sonicate to dissolve, if necessary.

Sample solution: Pass a portion of the solution under test through a suitable filter of 0.45-µm pore size. Dilute 2.0 mL of filtrate with *Medium* to 20 mL.

Chromatographic system

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

Mode: LC

Detector: UV 330 nm

Column: 4.6-mm × 15-cm; 5-µm packing L1

Column temperature: 40°

Flow rate: 1 mL/min

Injection volume: 5 µL

Run time: NLT 2.4 times the retention time of mesalamine

System suitability

Sample: *Standard solution*

Suitability requirements

Tailing factor: NMT 2.0

Relative standard deviation: NMT 2.0%

Analysis

Samples: *Standard solution* and *Sample solution*

Calculate the percentage of the labeled amount of mesalamine ($C_7H_7NO_3$) dissolved:

$$\text{Result} = (r_U/r_S) \times C_S \times V \times D \times (1/L) \times 100$$

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)

V = volume of *Medium*, 900 mL

D = dilution factor for the *Sample solution*, 10

L = label claim of mesalamine (mg/Suppository)

Tolerances: NLT 80% (Q) of the labeled amount of mesalamine ($C_7H_7NO_3$) is dissolved.

• **Uniformity of Dosage Units ⟨905⟩:** Meets the requirements

IMPURITIES

• **Organic Impurities**

Buffer, Mobile phase, and **Sample stock solution:** Prepare as directed in the *Assay*.

System suitability solution: 2.5 µg/mL each of USP Mesalamine RS and USP 3-Aminosalicylic Acid RS in *Mobile phase*. Sonicate to dissolve, if necessary.

Standard solution: 1 µg/mL of USP Mesalamine RS in *Mobile phase*. Sonicate to dissolve, if necessary.

Sensitivity solution: 0.25 µg/mL of USP Mesalamine RS from the *Standard solution* in *Mobile phase*

Sample solution: Nominally 500 µg/mL of mesalamine from the *Sample stock solution* in *Mobile phase*

Chromatographic system

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

Mode: LC

Detector: UV 220 nm

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

Column temperature: 30°

Flow rate: 1.5 mL/min

Injection volume: 20 µL

Run time: NLT 4 times the retention time of mesalamine

System suitability

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

[NOTE—The relative retention times in *Table 1* are provided as information that could aid in peak assignment.]

Table 1

Name	Relative Retention Time
Mesalamine dicarboxylic acid analog[a]	0.18
Gentisic acid[b]	0.35
Hydroxyanthranilic acid[c]	0.59
Mesalamine	1.0
3-Aminosalicylic acid	1.16

[a] 5-Amino-2-hydroxyisophthalic acid.

[b] 2,5-Dihydroxybenzoic acid.

[c] 2-Amino-5-hydroxybenzoic acid.

Suitability requirements

Resolution: NLT 1.5 between mesalamine and 3-aminosalicylic acid, *System suitability solution*

Relative standard deviation: NMT 5.0%, *Standard solution*

Signal-to-noise ratio: NLT 10, *Sensitivity solution*

Analysis

Samples: *Standard solution* and *Sample solution*

Calculate the percentage of gentisic acid and any unspecified degradation product in the portion of Suppositories taken:

$$\text{Result} = (r_U/r_S) \times (C_S/C_U) \times (1/F) \times 100$$

r_U = peak response of gentisic acid or any unspecified degradation product 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)

F = relative response factor (see *Table 2*)

Acceptance criteria: See *Table 2*. The reporting threshold is 0.05%.

Table 2

Name	Relative Response Factor	Acceptance Criteria, NMT (%)
Gentisic acid	2.4	0.2
Any unspecified degradation product	1.0	0.2
Total degradation products	—	0.5

SPECIFIC TESTS

• **Microbial Enumeration Tests ⟨61⟩** and **Tests for Specified Microorganisms ⟨62⟩:** The total aerobic microbial count is NMT 10^3 cfu/g. The total combined yeasts and molds count is NMT 10^2 cfu/g.

ADDITIONAL REQUIREMENTS

• **Packaging and Storage:** Preserve in tight containers. Store below 25°. May be refrigerated. Keep away from direct heat, light, or humidity.

• **USP Reference Standards ⟨11⟩**

USP 3-Aminosalicylic Acid RS

3-Amino-2-hydroxybenzoic acid.

$C_7H_7NO_3$ 153.14

USP Mesalamine RS▲ (USP 1-Dec-2024)

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

Topic/Question	Contact	Expert Committee
MESALAMINE SUPPOSITORIES	Documentary Standards Support	SM22020 Small Molecules 2
REFERENCE STANDARD SUPPORT	RS Technical Services RSTECH@usp.org	SM22020 Small Molecules 2

Chromatographic Database Information: Chromatographic Database

Most Recently Appeared In:
Pharmacopeial Forum: Volume No. 48(6)

Current DocID: GUID-911FAC3F-744A-405F-BC8D-17B7EE479426_2_en-US

DOI: https://doi.org/10.31003/USPNF_M49445_02_01

DOI ref: l9t94