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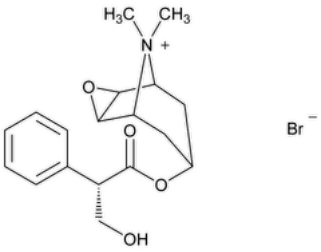
Methscopolamine Bromide



$C_{18}H_{24}BrNO_4$ 398.29

3-Oxa-9-azoniatricyclo[3.3.1.$0^{2,4}$]nonane, 7-(3-hydroxy-1-oxo-2-phenylpropoxy)-9,9-dimethyl-, bromide, [7(*S*)-(1α,2β,4β,5α,7β]-; 6β,7β-Epoxy-3α-hydroxy-8-methyl-1α*H*,5α*H*-tropanium bromide (−)-tropate; (1*R*,2*R*,4*S*,5*S*,7*s*)-7-{[(*S*)-3-Hydroxy-2-phenylpropanoyl]oxy}-9,9-dimethyl-3-oxa-9-azatricyclo[3.3.1.$0^{2,4}$]nonan-9-ium bromide CAS RN®: 155-41-9; UNII: RTN51LK7WL.

DEFINITION

Methscopolamine Bromide contains NLT 97.0% and NMT 103.0% of methscopolamine bromide ($C_{18}H_{24}BrNO_4$), calculated on the dried basis.

IDENTIFICATION

Change to read:

• **A.** ▲Spectroscopic Identification Tests ⟨197⟩, *Infrared Spectroscopy*, 197A or 197K▲ (CN 1-May-2020) **:** Meets the requirements

• **B.** Identification Tests—General ⟨191⟩, *Chemical Identification Tests, Bromide*

Sample solution: 50 mg/mL in water

Acceptance criteria: Meets the requirements

ASSAY

• **Procedure**

Buffer: A solution containing 5.16 g/L of sodium 1-hexanesulfonate monohydrate and 3.40 g/L of monobasic potassium phosphate in water, adjusted with 1 M phosphoric acid to a pH of 2.8

Solution A: Acetonitrile and *Buffer* (15:85)

Solution B: Acetonitrile and *Buffer* (50:50)

Mobile phase: See *Table 1*. Return to original conditions and re-equilibrate the system.

Table 1

Time (min)	Solution A (%)	Solution B (%)
0	100	0
3	100	0
10	85	15

Standard solution: 1.0 mg/mL of USP Methscopolamine Bromide RS in *Solution A*

Sample solution: 1.0 mg/mL of Methscopolamine Bromide in *Solution A*

Chromatographic system

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

Mode: LC

Detector: UV 210 nm

Column: 4.6-mm × 10.0-cm; monolithic packing L1

Column temperature: 50°

Flow rate: 3 mL/min

Injection volume: 5 µL

System suitability

Sample: *Standard solution*

Suitability requirements

Relative standard deviation: NMT 1% for 6 replicate injections

Analysis

Samples: *Standard solution* and *Sample solution*

Calculate the percentage of methscopolamine bromide ($C_{18}H_{24}BrNO_4$) in the portion of Methscopolamine Bromide taken:

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

r_U = peak response from the *Sample solution*

r_S = peak response from the *Standard solution*

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

C_U = concentration of Methscopolamine Bromide in the *Sample solution* (mg/mL)

Acceptance criteria: 97.0%–103.0% on the dried basis

IMPURITIES

- **Residue on Ignition ⟨281⟩:** NMT 0.1%
- **Organic Impurities**

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

Scopolamine hydrobromide solution: 0.05 mg/mL of USP Scopolamine Hydrobromide RS in *Solution A*

System suitability solution: 1.0 mg/mL of USP Methscopolamine Bromide RS and 1.0 µg/mL of USP Scopolamine Hydrobromide RS in *Solution A*, from the *Scopolamine hydrobromide solution*. [Note—This solution contains 0.1% of scopolamine hydrobromide.]

Standard stock solution: Prepare as directed for the *Standard solution* in the *Assay*.

Diluted standard solution: 0.5 µg/mL of USP Methscopolamine Bromide RS in *Solution A*, from the *Standard stock solution*

Chromatographic system: Proceed as directed in the *Assay*.

System suitability

Sample: *System suitability solution*

Suitability requirements

Resolution: NLT 1.5 between methscopolamine and scopolamine

Tailing factor: NMT 2.0 for the methscopolamine peak

Analysis

Sample: *Sample solution*

Calculate the percentage of each impurity in the portion of Methscopolamine Bromide taken:

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

r_U = peak area of any impurity from the *Sample solution*

r_S = peak area of methscopolamine from the *Sample solution*

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

Acceptance criteria: See *Table 2*. Disregard any peak with an area less than that of the methscopolamine peak of the *Diluted standard solution*, and disregard any peak that is due to *Solution A*.

Table 2

Name	Relative Retention Time	Relative Response Factor	Acceptance Criteria, NMT (%)
Tropic acid	0.4	2.4	0.1
Scopolamine hydrobromide	0.9	1.0	0.1
Methylatropine bromide[a]	1.2	1.0	0.1

Name	Relative Retention Time	Relative Response Factor	Acceptance Criteria, NMT (%)
Apomethscopolamine bromide[b]	3.5	1.7	0.1
Any other individual impurity	—	1.0	0.1
Total impurities	—	—	0.5

[a] (1*R*,3*r*,5*S*)-3-[(3-Hydroxy-2-phenylpropanoyl)oxy]-8,8-dimethyl-8-azabicyclo[3.2.1]octan-8-ium bromide.

[b] (1*R*,2*R*,4*S*,5*S*,7*s*)-9,9-Dimethyl-7-[(2-phenylacryloyl)oxy]-3-oxa-9-azatricyclo[3.3.1.$0^{2,4}$]nonan-9-ium bromide.

SPECIFIC TESTS

- **Optical Rotation** ⟨781S⟩, *Procedures, Specific Rotation*
  Sample solution: 50 mg/mL in water
  Acceptance criteria: −21° to −25°
- **Loss on Drying** ⟨731⟩
  Analysis: Dry at 105° for 2 h.
  Acceptance criteria: NMT 2.0%

ADDITIONAL REQUIREMENTS

- **Packaging and Storage:** Preserve in tight, light-resistant containers, and store at room temperature.
- **USP Reference Standards** ⟨11⟩
  USP Methscopolamine Bromide RS
  USP Scopolamine Hydrobromide RS

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

Topic/Question	Contact	Expert Committee
METHSCOPOLAMINE BROMIDE	Documentary Standards Support	SM32020 Small Molecules 3

Chromatographic Database Information: Chromatographic Database

Most Recently Appeared In:
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