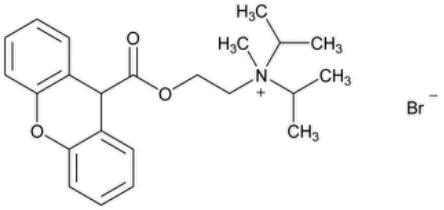
Status: Currently Official on 16-Feb-2025
Official Date: Official as of 01-Aug-2017
Document Type: USP Monographs
DocId: GUID-90C519CE-109F-4ED1-8992-E45E45D141AF_4_en-US
DOI: https://doi.org/10.31003/USPNF_M70250_04_01
DOI Ref: l6cfx

Propantheline Bromide



$C_{23}H_{30}BrNO_3$ 448.39

2-Propanaminium, *N*-methyl-*N*-(1-methylethyl)-*N*-[2-[(9*H*-xanthen-9-ylcarbonyl)oxy]ethyl]-, bromide;

(2-Hydroxyethyl)diisopropylmethylammonium bromide xanthene-9-carboxylate CAS RN®: 50-34-0; UNII: UX9Z118X9F.

DEFINITION

Propantheline Bromide contains NLT 98.0% and NMT 102.0% of propantheline bromide ($C_{23}H_{30}BrNO_3$), calculated on the dried basis.

IDENTIFICATION

• **A.**

Sample solution: 6 mg/mL of Propantheline Bromide in chloroform

Analysis: In a well-ventilated hood, apply 2 mL of *Sample solution* dropwise to a salt plate while continuously evaporating the solvent with the aid of an IR heat lamp and a current of dry air. Heat the residue at 105° for 15 min.

Acceptance criteria: The IR absorption spectrum of the residue on the single salt plate exhibits maxima only at the same wavelengths as those of a similar preparation of USP Propantheline Bromide RS, treated in the same manner.

• **B.** Thin-Layer Chromatographic Identification Test ⟨201⟩

Standard solution: 6 mg/mL USP Propantheline Bromide RS in chloroform

Sample solution: 6 mg/mL of Propantheline Bromide in chloroform

Chromatographic system

(See *Chromatography ⟨621⟩, Thin-Layer Chromatography*.)

Mode: TLC

Adsorbent: 0.25-mm layer of chromatographic silica gel

Application volume: 5 µL

Developing solvent system: Acetone and 1 N hydrochloric acid (1:1)

Spray reagent: Potassium–bismuth iodide TS

Analysis

Samples: *Standard solution* and *Sample solution*

Develop the chromatogram until the solvent front has moved three-fourths the length of the plate. Dry the plate at 105° for 5 min. Spray the plate with *Spray reagent*, and heat at 105° for 5 min.

Acceptance criteria: The R_F value of the principal spot from the *Sample solution* corresponds to that from the *Standard solution*.

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

Sample solution: 10 mg/mL

Analysis: Add 2 mL of 2 N nitric acid to 5 mL of *Sample solution*.

Acceptance criteria: This solution meets the requirements of the tests for bromide, except that in the test *A*, the chloroform layer may be yellow.

ASSAY

• Procedure

Sample solution: 600 mg

Analysis: Dissolve the *Sample* in a mixture of 20 mL of glacial acetic acid and 15 mL of mercuric acetate TS, warming slightly if necessary to dissolve. Cool to room temperature. Titrate the *Sample solution* with 0.1 N perchloric acid VS, determining the endpoint potentiometrically. Perform a blank determination, and make any necessary correction. Each mL of 0.1 N perchloric acid is equivalent to 44.84 mg of propantheline bromide ($C_{23}H_{30}BrNO_3$).

Acceptance criteria: 98.0%–102.0% on the dried basis

IMPURITIES

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

Buffer: 17.3 g of sodium dodecyl sulfate in 1000 mL of water containing 10 mL of phosphoric acid in a 2000-mL volumetric flask. Add 250 mL of 0.5 M sodium hydroxide, and while stirring, adjust with 0.5 M sodium hydroxide or dilute phosphoric acid (1 in 10) to a pH of 3.5 ± 0.05. Dilute with water to volume.

Mobile phase: Acetonitrile and *Buffer* (55:45)

Standard solution: 6.0 µg/mL of USP Propantheline Bromide Related Compound A RS, 1.5 µg/mL of USP Xanthanoic Acid RS, and 1.5 µg/mL of USP Xanthone RS in *Mobile phase*

Sample solution: 0.3 mg/mL of Propantheline Bromide in *Mobile phase*

Chromatographic system

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

Mode: LC

Detector: UV 254 nm

Column: 4.6-mm × 25-cm; packing L7

Flow rate: 2.0 mL/min

Run time: NLT 1.5 times the retention time of the propantheline bromide peak

Injection volume: 50 µL

System suitability

Sample: *Standard solution*

Suitability requirements

Resolution: NLT 1.2 between the least resolved peaks

Relative standard deviation: NMT 6.0% for each component

Analysis

Samples: *Standard solution* and *Sample solution*

Calculate the percentage of xanthanoic acid, xanthone, and propantheline bromide related compound A in the portion of Propantheline Bromide taken:

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

r_U = peak response of xanthanoic acid, xanthone, or propantheline bromide related compound A from the *Sample solution*

r_S = peak response of xanthanoic acid, xanthone, or propantheline bromide related compound A from the *Standard solution*

C_S = concentration of xanthanoic acid, xanthone, or propantheline bromide related compound A in the *Standard solution* (µg/mL)

C_U = concentration of Propantheline Bromide in the *Sample solution* (µg/mL)

Calculate the percentage of all unknown impurities in the portion of Propantheline Bromide taken:

$$\text{Result} = (r_U/r_T) \times 100$$

r_U = peak response of each unknown impurity

r_T = sum of the responses of all the measured peaks

Acceptance criteria: Disregard any peak less than 0.1%.

Individual impurities: NMT 2.0% for propantheline bromide related compound A; NMT 0.5% each for xanthone and xanthanoic acid

Total impurities: NMT 3.0%

SPECIFIC TESTS

- **Content of Bromide**

Sample solution: 500 mg

Analysis: Dissolve the *Sample* in 40 mL of water, and add 10 mL of glacial acetic acid and 40 mL of methanol. Titrate the *Sample solution* with 0.1 N silver nitrate VS, using eosin Y TS as an indicator. Each mL of 0.1 N silver nitrate is equivalent to 7.990 mg of bromide.

Acceptance criteria: 17.5%–18.2% of bromide, calculated on the dried basis

- **Loss on Drying** ⟨731⟩

Analysis: Dry at 105° for 4 h.

Acceptance criteria: NMT 0.5%

ADDITIONAL REQUIREMENTS

- **Packaging and Storage:** Preserve in well-closed containers.
- **USP Reference Standards** ⟨11⟩

USP Propantheline Bromide RS

USP Propantheline Bromide Related Compound A RS

9-Hydroxypropantheline bromide.

$C_{23}H_{30}BrNO_4$ 464.39

USP Xanthanoic Acid RS $C_{14}H_{10}O_3$ 226.23

USP Xanthone RS $C_{13}H_8O_2$ 196.21

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

Topic/Question	Contact	Expert Committee
PROPANTHELINE BROMIDE	Documentary Standards Support	SM32020 Small Molecules 3
REFERENCE STANDARD SUPPORT	RS Technical Services RSTECH@usp.org	SM32020 Small Molecules 3

Chromatographic Database Information: Chromatographic Database

Most Recently Appeared In:
Pharmacopeial Forum: Volume No. PF 29(2)

Current DocID: GUID-90C519CE-109F-4ED1-8992-E45E45D141AF_4_en-US
Previous DocID: GUID-90C519CE-109F-4ED1-8992-E45E45D141AF_2_en-US
DOI: https://doi.org/10.31003/USPNF_M70250_04_01
DOI ref: l6cfx