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Chlorpromazine Hydrochloride Tablets

To view the Notice from the Expert Committee that posted in conjunction with this accelerated revision, please click www.uspnf.com/rb-notice-chlorpromazine-hcl-tabs-20241122.

DEFINITION

Chlorpromazine Hydrochloride Tablets contain NLT 95.0% and NMT 105.0% of the labeled amount of chlorpromazine hydrochloride ($C_{17}H_{19}ClN_2S \cdot HCl$).

[NOTE—Throughout the following analyses, protect sample specimens, the Reference Standard, and solutions containing them, by conducting the procedures without delay, under subdued light, or using low-actinic glassware.]

IDENTIFICATION

- **A.** The principal spot found in the test for *Other Alkylated Phenothiazines* corresponds in R_F to the spot of the *Standard solution*.
- **B.** **Identification Tests—General** ⟨191⟩, *Chloride*

Sample stock solution: Digest a quantity of powdered Tablets, equivalent to about 25 mg of chlorpromazine hydrochloride, with 25 mL of water. Pass the resulting solution through a suitable filter.

Sample solution: A solution (1 in 10) using the *Sample stock solution*

Acceptance criteria: Meets the requirements

ASSAY

- **Procedure**

Standard solution: 8 µg/mL of USP Chlorpromazine Hydrochloride RS in 0.1 N hydrochloric acid

Sample stock solution: Nominally 0.2 mg/mL of chlorpromazine hydrochloride prepared as follows. Transfer a portion of finely powdered Tablets (NLT 20), equivalent to 100 mg of chlorpromazine hydrochloride, to a 500-mL volumetric flask. Add 200 mL of water and 5 mL of hydrochloric acid, insert the stopper, and shake for about 10 min. Dilute with water to volume, and mix. Pass a portion of the resulting solution through a suitable filter, discarding the first 50 mL of the filtrate.

Sample solution: Nominally 8 µg/mL of chlorpromazine hydrochloride prepared as follows. Pipet 10.0 mL of the *Sample stock solution* into a 250-mL separator, add 20 mL of water, render alkaline with ammonium hydroxide, and extract with four 25-mL portions of ethyl ether. Extract the combined ethyl ether extracts with four 25-mL portions of 0.1 N hydrochloric acid, collecting the aqueous extracts in a 250-mL volumetric flask. Aerate to remove residual ethyl ether, and dilute with 0.1 N hydrochloric acid to volume.

Instrumental conditions

Mode: UV-Vis

Analytical wavelengths: 254 and 277 nm

Cell: 1 cm

Blank: 0.1 N hydrochloric acid

Analysis

Samples: *Standard solution* and *Sample solution*

Calculate the percentage of the labeled amount of chlorpromazine hydrochloride ($C_{17}H_{19}ClN_2S \cdot HCl$) in the portion of Tablets taken:

$$\text{Result} = [(A_{U1} - A_{U2})/(A_{S1} - A_{S2})] \times (C_S/C_U) \times 100$$

A_{U1} = absorbance of the *Sample solution*, 254 nm

A_{U2} = absorbance of the *Sample solution*, 277 nm

A_{S1} = absorbance of the *Standard solution*, 254 nm

A_{S2} = absorbance of the *Standard solution*, 277 nm

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

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

Acceptance criteria: 95.0%–105.0%

PERFORMANCE TESTS

Change to read:

• **Dissolution** ⟨711⟩

Test 1

Medium: 0.1 N hydrochloric acid solution; 900 mL

Apparatus 1: 50 rpm

Time: 30 min

Standard solution: USP Chlorpromazine Hydrochloride RS in *Medium*

Sample solution: Pass a portion of the solution under test through a suitable filter. Dilute with *Medium*, if necessary.

Instrumental conditions

Mode: UV-Vis

Analytical wavelength: Maximum absorbance at about 254 nm

Analysis

Samples: *Standard solution* and *Sample solution*

Determine the percentage of the labeled amount of chlorpromazine hydrochloride ($C_{17}H_{19}ClN_2S \cdot HCl$) dissolved.

Tolerances: NLT 80% (*Q*) of the labeled amount of chlorpromazine hydrochloride ($C_{17}H_{19}ClN_2S \cdot HCl$) is dissolved.

Test 2: If the product complies with this test, the labeling indicates that it meets USP *Dissolution Test 2*.

Medium: 0.1 N hydrochloric acid solution; 500 mL, deaerated

Apparatus 1: 75 rpm

Time: 15 min

Standard solution: 0.055 mg/mL of USP Chlorpromazine Hydrochloride RS in *Medium*

Sample solution: Pass a portion of the solution under test through a suitable filter. Dilute with *Medium*, if necessary.

Instrumental conditions

(See *Ultraviolet-Visible Spectroscopy* ⟨857⟩.)

Mode: UV-Vis

Analytical wavelength: UV 254 nm

Cell: 1.0 mm

Blank: *Medium*

System suitability

Sample: *Standard solution*

Suitability requirements

Relative standard deviation: NMT 1.0%

Analysis

Samples: *Standard solution* and *Sample solution*

Calculate the percentage of the labeled amount of chlorpromazine hydrochloride ($C_{17}H_{19}ClN_2S \cdot HCl$) dissolved:

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

A_U = absorbance of chlorpromazine from the *Sample solution*

A_S = absorbance of chlorpromazine from the *Standard solution*

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

V = volume of *Medium*, 500 mL

D = dilution factor for the *Sample solution*

L = label claim (mg/Tablet)

Tolerances: NLT 80% (*Q*) of the labeled amount of chlorpromazine hydrochloride ($C_{17}H_{19}ClN_2S \cdot HCl$) is dissolved.

▲**Test 4:** If the product complies with this test, the labeling indicates that it meets USP *Dissolution Test 4*.

Medium: 0.1 N hydrochloric acid; 500 mL, deaerated, if necessary

Apparatus 1: 100 rpm

Time: 30 min

Standard solution

For Tablets labeled to contain 10, 25, and 50 mg: (*L*/500) mg/mL of USP Chlorpromazine Hydrochloride RS in *Medium*, where *L* is the label claim in mg/Tablet. Sonicate to dissolve, if necessary.

For Tablets labeled to contain 100 and 200 mg: 0.1 mg/mL of USP Chlorpromazine Hydrochloride 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, discarding an appropriate volume of filtrate so that a consistent result can be obtained. Dilute with *Medium* to a concentration that is similar to that of the *Standard solution*, if necessary.

Instrumental conditions

(See *Ultraviolet-Visible Spectroscopy* ⟨857⟩.)

Mode: UV

Analytical wavelength: 254 nm

Path lengths

For Tablets labeled to contain 10 mg: 5 mm

For Tablets labeled to contain 25, 50, 100, and 200 mg: 1 mm

Blank: *Medium*

Analysis

Samples: *Standard solution* and *Sample solution*

Calculate the percentage of the labeled amount of chlorpromazine hydrochloride ($C_{17}H_{19}ClN_2S \cdot HCl$) dissolved:

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

A_U = absorbance from the *Sample solution*

A_S = absorbance from the *Standard solution*

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

V = volume of *Medium*, 500 mL

D = dilution factor for the *Sample solution*

L = label claim (mg/Tablet)

Tolerances: NLT 80% (*Q*) of the labeled amount of chlorpromazine hydrochloride ($C_{17}H_{19}ClN_2S \cdot HCl$) is dissolved.▲ (RB 1-Dec-2024)

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

IMPURITIES

• **Other Alkylated Phenothiazines**

Solution A: Ethyl acetate saturated with ammonium hydroxide

Standard stock solution: 5 mg/mL of USP Chlorpromazine Hydrochloride RS in methanol

Standard solution: 25 µg/mL from *Standard stock solution* in methanol

Sample solution: Transfer a portion of finely powdered Tablets, equivalent to 50 mg of chlorpromazine hydrochloride, to a stoppered centrifuge tube. Add 10 mL of methanol, shake vigorously, and centrifuge. Prior washing with water may be used to remove any sugar coating.

Chromatographic system

Mode: TLC

Adsorbent: Chromatographic silica gel mixture

Application volume: 10 µL

Developing solvent system: Freshly prepared mixture of ethyl ether and *Solution A* (50:50)

Analysis

Samples: *Standard stock solution*, *Standard solution*, and *Sample solution*

Apply separately the *Standard stock solution*, *Standard solution*, and *Sample solution* to the starting line of a thin-layer chromatographic plate coated with *Adsorbent*. Develop the chromatogram, using the *Developing solvent system*, until the solvent front has moved about 10 cm from the origin. Remove the plate from the chamber, and air-dry for 20 min. View under short-wave UV light.

Acceptance criteria: The area and intensity of any spot, other than the principal spot, from the *Sample solution* is not greater than that of the spot of the *Standard solution* (0.5%).

ADDITIONAL REQUIREMENTS

- **Packaging and Storage:** Preserve in well-closed, light-resistant containers.
- **Labeling:** The labeling states the *Dissolution* test used only if *Test 1* is not used.
- **USP Reference Standards** ⟨11⟩
  USP Chlorpromazine Hydrochloride RS

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

Topic/Question	Contact	Expert Committee
CHLORPROMAZINE HYDROCHLORIDE TABLETS	Documentary Standards Support	SM42020 Small Molecules 4

Chromatographic Database Information: Chromatographic Database

Most Recently Appeared In:
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