

Status: Currently Official on 17-Feb-2025
 Official Date: Official as of 01-Aug-2019
 Document Type: USP Monographs
 DocId: GUID-DDF12B01-1CB2-4068-9789-4BA52218335B_3_en-US
 DOI: https://doi.org/10.31003/USPNF_M2665_03_01
 DOI Ref: k9lgz

© 2025 USPC
 Do not distribute

Amiloride Hydrochloride and Hydrochlorothiazide Tablets

DEFINITION

Amiloride Hydrochloride and Hydrochlorothiazide Tablets contain NLT 90.0% and NMT 110.0% of the labeled amount of amiloride hydrochloride ($C_6H_8ClN_7O \cdot HCl$) and hydrochlorothiazide ($C_7H_8ClN_3O_4S_2$).

IDENTIFICATION

• **A.** The retention times of the major peaks of the *Sample solution* correspond to those of the *Standard solution*, as obtained in the Assay.

Change to read:

• **B.** ▲The UV spectrum of the amiloride peak of the *Sample solution* exhibits maxima and minima at the same wavelengths as that of the *Standard solution*, as obtained in the Assay. The UV spectrum of the hydrochlorothiazide peak of the *Diluted sample solution* exhibits maxima and minima at the same wavelengths as that of the *Diluted standard solution*, as obtained in the Assay. ▲ (USP 1-Aug-2019)

ASSAY

Change to read:

• PROCEDURE

Buffer: Dissolve 136 g of [monobasic potassium phosphate](#) in 800 mL of [water](#). Adjust with [phosphoric acid](#) to a pH of 3.0. Dilute with [water](#) to 1000 mL.

Mobile phase: [Methanol](#), [water](#), and *Buffer* (25:71:4)

Standard stock solution: 1.0 mg/mL of [USP Amiloride Hydrochloride RS](#) in [methanol](#)

Standard solution: 0.1 mg/mL of [USP Amiloride Hydrochloride RS](#) and 1 mg/mL of [USP Hydrochlorothiazide RS](#), prepared as follows.

Transfer 10.0 mL of the *Standard stock solution* to a 100-mL volumetric flask containing 100 mg of [USP Hydrochlorothiazide RS](#) and 20.0 mL of [methanol](#). Add 4.0 mL of [1 N hydrochloric acid](#), and dilute with [water](#) to volume.

▲**Diluted standard solution:** 0.005 mg/mL of [USP Amiloride Hydrochloride RS](#) and 0.05 mg/mL of [USP Hydrochlorothiazide RS](#), from the *Standard solution*, diluted with [water](#) ▲ (USP 1-Aug-2019)

Sample solution: ▲Nominally 0.1 mg/mL of amiloride hydrochloride and 1 mg/mL of hydrochlorothiazide, prepared as follows. ▲ (USP 1-Aug-2019) Transfer an equivalent to 5 mg of amiloride hydrochloride ▲ and 50 mg of hydrochlorothiazide ▲ (USP 1-Aug-2019) from powdered Tablets (NLT 20) to a 50-mL volumetric flask. Add 15.0 mL of [methanol](#) and 2.0 mL of [1 N hydrochloric acid](#). Sonicate for 10 min, dilute with [water](#) to volume, sonicate for an additional 10 min, and filter.

▲**Diluted sample solution:** Nominally 0.005 mg/mL of amiloride hydrochloride and 0.05 mg/mL of hydrochlorothiazide, from the *Sample solution*, diluted with [water](#) ▲ (USP 1-Aug-2019)

Chromatographic system

(See [Chromatography \(621\), System Suitability](#).)

Mode: LC

Detector: UV 286 nm. ▲For *Identification B*, use a diode array detector in the range of 200–400 nm. ▲ (USP 1-Aug-2019)

Column: 3.9-mm × 30-cm; ▲10-μm ▲ (USP 1-Aug-2019) packing L1

Flow rate: 1 mL/min

Injection volume: 10 μL

▲**Run time:** NLT 2 times the retention time of amiloride ▲ (USP 1-Aug-2019)

System suitability

Sample: *Standard solution*

[NOTE—The relative retention times for hydrochlorothiazide and amiloride ▲▲ (USP 1-Aug-2019) are about 0.7 and 1.0, respectively.]

Suitability requirements

Resolution: NLT 2.0 between hydrochlorothiazide and amiloride ▲▲ (USP 1-Aug-2019)

Relative standard deviation: NMT 2.0% for hydrochlorothiazide and amiloride

Analysis

Samples: *Standard solution* and *Sample solution*

Calculate the percentage of the labeled amount of amiloride hydrochloride ($C_6H_8ClN_7O \cdot HCl$) in the portion of Tablets taken:

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

r_U = peak response of amiloride ▲ (USP 1-Aug-2019) from the *Sample solution*

r_S = peak response of amiloride ▲ (USP 1-Aug-2019) from the *Standard solution*

C_S = concentration of [USP Amiloride Hydrochloride RS](#) ▲ (USP 1-Aug-2019) in the *Standard solution* (mg/mL)

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

Calculate the percentage of the labeled amount of hydrochlorothiazide ($C_7H_8ClN_3O_4S_2$) in the portion of Tablets taken:

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

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

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

C_S = concentration of [USP Hydrochlorothiazide RS](#) in the *Standard solution* (mg/mL)

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

Acceptance criteria: 90.0%–110.0% of the labeled amount of amiloride hydrochloride ($C_6H_8ClN_7O \cdot HCl$) and hydrochlorothiazide ($C_7H_8ClN_3O_4S_2$)

PERFORMANCE TESTS

Change to read:

• [DISSOLUTION \(711\)](#).

Medium: [0.1 N hydrochloric acid](#); 900 mL

Apparatus 2: 50 rpm

Time: 30 min

▲ Determine the percentage of the labeled amount of amiloride hydrochloride and hydrochlorothiazide dissolved using the *Spectrophotometric procedure* or the *Chromatographic procedure*.

Spectrophotometric procedure ▲ (USP 1-Aug-2019)

Amiloride standard solution: ▲ 0.005 mg/mL of [USP Amiloride Hydrochloride RS](#), prepared as follows. Transfer 52 mg of [USP Amiloride Hydrochloride RS](#) to ▲ (USP 1-Aug-2019) a 200-mL volumetric flask. Dissolve in and dilute with [methanol](#) to volume. Transfer 2.0 mL of this solution to a 100-mL volumetric flask, and dilute with *Medium* to volume.

Hydrochlorothiazide standard solution: 0.01 mg/mL of [USP Hydrochlorothiazide RS](#), prepared as follows. Transfer 100 mg of [USP Hydrochlorothiazide RS](#) to a 100-mL volumetric flask. Dissolve in and dilute with [methanol](#) to volume. Transfer 5.0 mL of this solution to a 100-mL volumetric flask, and dilute with *Medium* to volume. Transfer 10.0 mL of the resulting solution to a 50-mL volumetric flask, and dilute with *Medium* to volume.

Sample solution A: Pass a portion of the solution under test through a glass fiber filter of 0.45-μm pore size.

Sample solution B: Transfer 5.0 mL of *Sample solution A* to a 25-mL volumetric flask, and dilute with *Medium* to volume.

Blank: *Medium*

Instrumental conditions

Mode: UV-Vis

Analytical wavelengths: 363 nm for amiloride hydrochloride; 270 nm for hydrochlorothiazide

Analysis

Samples: *Amiloride standard solution*, *Hydrochlorothiazide standard solution*, *Sample solution A*, and *Sample solution B*

Calculate the percentage ▲ of the labeled amount ▲ (USP 1-Aug-2019) of amiloride hydrochloride ($C_6H_8ClN_7O \cdot HCl$) dissolved:

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

A_U = absorbance of *Sample solution A*

C_S = concentration of ▲ [USP Amiloride Hydrochloride RS](#) in ▲ (USP 1-Aug-2019) the *Amiloride standard solution* (mg/mL)

V = volume of *Medium*, 900 mL

A_S = absorbance of the *Amiloride standard solution*

L = label claim of amiloride ▲ hydrochloride ▲ (USP 1-Aug-2019) (mg/Tablet)

▲ Calculate F , the ratio of absorbance of the *Amiloride standard solution* at 270 nm to that at 363 nm: