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Acetazolamide Tablets

To view the Notice from the Expert Committee that posted in conjunction with this accelerated revision, please click www.uspnf.com/rb-acetazolamide-tabs-20240126.

DEFINITION
Acetazolamide Tablets contain NLT 95.0% and NMT 105.0% of the labeled amount of acetazolamide ($C_4H_6N_4O_3S_2$).

IDENTIFICATION

• **A. Spectroscopic Identification Tests ⟨197⟩, *Infrared Spectroscopy*:** 197K

Sample: Extract a quantity of finely powdered Tablets, equivalent to about 500 mg of acetazolamide, with 50 mL of acetone. Filter, and add sufficient solvent hexane to the filtrate to cause formation of a heavy, white precipitate. Collect the precipitate on a medium-porosity, sintered-glass funnel, and dry with suction.

Acceptance criteria: Meet the requirements

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

ASSAY

• **Procedure**

Mobile phase: Dissolve 4.1 g of anhydrous sodium acetate in 950 mL of water, add 20 mL of methanol and 30 mL of acetonitrile, and mix. Adjust with glacial acetic acid to a pH of 4.0.

Standard solution: 0.1 mg/mL of USP Acetazolamide RS prepared as follows. Transfer USP Acetazolamide RS into a suitable volumetric flask, add 0.5 N sodium hydroxide equivalent to 10% of the final volume, and dilute with water to volume.

Sample stock solution: Nominally equivalent to 1.0 mg/mL of acetazolamide prepared as follows. Transfer a portion of the powder, from NLT 20 Tablets, equivalent to 100 mg acetazolamide into a 100-mL volumetric flask. Add 10 mL of 0.5 N sodium hydroxide, sonicate for 5 min, cool to room temperature, and dilute with water to volume. Filter a portion of this solution, discarding the first 20 mL of the filtrate.

Sample solution: Nominally equivalent to 0.1 mg/mL of acetazolamide prepared as follows. Transfer 10.0 mL of *Sample stock solution* and 10 mL of 0.5 N sodium hydroxide to a 100-mL volumetric flask, and dilute with water to volume.

Chromatographic system

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

Mode: LC

Detector: UV 254 nm

Column: 4.6-mm × 25-cm; packing *L1*

Flow rate: 2 mL/min

Injection volume: 20 µL

System suitability

Sample: *Standard solution*

Suitability requirements

Tailing factor: NMT 1.5

Relative standard deviation: NMT 1.0%

Analysis

Samples: *Standard solution* and *Sample solution*

Calculate the percentage of the labeled amount of acetazolamide ($C_4H_6N_4O_3S_2$) in the portion of Tablets taken:

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

r_U = acetazolamide peak response from the *Sample solution*

r_S = acetazolamide peak response from the *Standard solution*

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

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

Acceptance criteria: 95.0%–105.0%

PERFORMANCE TESTS

Change to read:

• **Dissolution** ⟨711⟩

▲**Test 1**▲ (RB 1-Feb-2024)

Medium: 0.01 N hydrochloric acid; 900 mL

Apparatus 1: 100 rpm

Time: 60 min

Standard solution: USP Acetazolamide RS in *Medium*

Sample solution: Dilute with *Medium* if necessary.

Instrumental conditions

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

Mode: UV

Analytical wavelength: 265 nm

Analysis

Samples: *Standard solution* and *Sample solution*

Determine the percentage of the labeled amount of acetazolamide ($C_4H_6N_4O_3S_2$) dissolved:

$$(A_U/A_S) \times C_S \times D \times (V/L) \times 100$$

A_U = absorbance of the *Sample solution*

A_S = absorbance of the *Standard solution*

C_S = concentration of the *Standard solution* (mg/mL)

D = dilution factor of the *Sample solution*, if needed

V = volume of *Medium*, 900 mL

L = label claim (mg/Tablet)

Tolerances: NLT 75% (Q) of the labeled amount of acetazolamide ($C_4H_6N_4O_3S_2$) is dissolved.

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

Medium: 0.01 N hydrochloric acid, deaerated, if necessary; 900 mL

Apparatus 1: 100 mesh; 100 rpm

Time: 20 min

Standard solution

For Tablets labeled to contain 125 mg: (L/900) mg/mL of USP Acetazolamide RS prepared as follows. Transfer an appropriate quantity of USP Acetazolamide RS to a suitable volumetric flask, add 10% of the flask volume of acetonitrile, and sonicate to dissolve, if necessary. Dilute with *Medium* to volume.

For Tablets labeled to contain 250 mg: (L/900) mg/mL of USP Acetazolamide RS prepared as follows. Transfer an appropriate quantity of USP Acetazolamide RS to a suitable volumetric flask, add 20% of the flask volume of acetonitrile, and sonicate to dissolve, if necessary. Dilute with *Medium* to volume.

Sample solution: Pass through a suitable filter of 0.45-µm pore size, discarding an appropriate volume of filtrate so that a consistent result can be obtained.

Instrumental conditions

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

Mode: UV

Analytical wavelength: 265 nm

Cell: 1 mm

Blank: *Medium*

Analysis

Samples: *Standard solution* and *Sample solution*

Calculate the percentage of the labeled amount of acetazolamide ($C_4H_6N_4O_3S_2$) dissolved:

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

A_U = absorbance from the *Sample solution*

A_S = absorbance from the *Standard solution*

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

V = volume of the *Medium*, 900 mL

L = label claim (mg/Tablet)

Tolerances: NLT 80% (*Q*) of the labeled amount of acetazolamide ($C_4H_6N_4O_3S_2$) is dissolved.▲ (RB 1-Feb-2024)

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

ADDITIONAL REQUIREMENTS

• **Packaging and Storage:** Preserve in tight containers, and store at controlled room temperature.

Add the following:

▲• **Labeling:** The labeling states the *Dissolution* test used only if *Test 1* is not used.▲ (RB 1-Feb-2024)

• **USP Reference Standards ⟨11⟩**

USP Acetazolamide RS

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

Topic/Question	Contact	Expert Committee
ACETAZOLAMIDE TABLETS	Documentary Standards Support	SM32020 Small Molecules 3

Chromatographic Database Information: Chromatographic Database

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