Status: Currently Official on 15-Feb-2025
Official Date: Official Prior to 2013
Document Type: USP Monographs
DocId: GUID-86541F1C-3687-4E9D-BBEC-BD81FD6D6361_1_en-US
DOI: https://doi.org/10.31003/USPNF_M35038_01_01
DOI Ref: p9kvg

Glipizide Tablets

» Glipizide Tablets contain not less than 90.0 percent and not more than 110.0 percent of the labeled amount of glipizide ($C_{21}H_{27}N_5O_4S$).

Packaging and storage—Preserve in tight containers.

Labeling—When more than one *Dissolution* test is given, the labeling states the test used only if *Test 1* is not used.

USP Reference standards ⟨11⟩—

USP Glipizide RS

USP Glipizide Related Compound A RS

N-{2-[(4-Aminosulfonyl)phenyl]ethyl}-5-methyl-pyrazinecarboxamide.

$C_{14}H_{16}N_4O_3S$ 320.37

Identification—

A: The retention time of the major peak in the chromatogram of the *Assay preparation* corresponds to that of the *Standard preparation,* as obtained in the *Assay*.

B: Transfer a quantity of finely powdered Tablets, equivalent to about 10 mg of glipizide, to a glass-stoppered centrifuge tube, add 10 mL of methanol, insert a stopper into the tube, and shake. Centrifuge the mixture, and use the clear supernatant as the test solution. Separately apply, as streaks about 7 cm in length, 100 µL of the test solution and 100 µL of a Standard solution of USP Glipizide RS in methanol containing 1 mg per mL, to a thin-layer chromatographic plate (see *Chromatography* ⟨621⟩) coated with a 0.25-mm layer of chromatographic silica gel. Allow the streaks to dry, and develop the chromatogram in a solvent system consisting of a mixture of toluene, ethyl acetate, and 98% formic acid (5:3:2) until the solvent front has moved to within 2.5 cm of the top of the plate. Remove the plate from the developing chamber, mark the solvent front, and dry the plate at 80° for 30 minutes. Cool the plate, spray it with 0.5% sodium hypochlorite solution, and allow the plate to air-dry. Spray the plate with alcohol, air-dry, and spray with a freshly prepared mixture of 1% soluble starch solution and 1% potassium iodide solution (1:1): the R_F value of the principal band obtained from the test solution corresponds to that obtained from the Standard solution.

Dissolution ⟨711⟩—

TEST 1—

Medium: simulated intestinal fluid TS (without pancreatin); 900 mL.

Apparatus 2: 50 rpm.

Time: 45 minutes.

Determine the amount of $C_{21}H_{27}N_5O_4S$ dissolved from UV absorbances at the wavelength of maximum absorbance at about 276 nm of filtered portions of the solution under test, in comparison with a Standard solution having a known concentration of USP Glipizide RS in the same medium.

Tolerances—Not less than 80% *(Q)* of the label claim of $C_{21}H_{27}N_5O_4S$ is dissolved in 45 minutes.

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

Medium: simulated intestinal fluid TS (without pancreatin), with pH adjusted to pH 7.5 ± 0.1 with 0.2 N sodium hydroxide; 900 mL.

Apparatus 2 and *Time*— Proceed as directed under *Test 1*.

Determine the amount of $C_{21}H_{27}N_5O_4S$ dissolved from UV absorbances at the wavelength of maximum absorbance at about 276 nm of filtered portions of the solution under test, in comparison with a Standard solution having a known concentration of USP Glipizide RS in the same medium.

Tolerances—Not less than 80% *(Q)* of the label claim of $C_{21}H_{27}N_5O_4S$ is dissolved in 45 minutes.

Uniformity of dosage units ⟨905⟩: meet the requirements, the following procedure being used where the test for *Content Uniformity* is required.

Buffer, Mobile phase, and *Standard preparation*—Prepare as directed in the *Assay.*

Test preparation—Transfer 1 Tablet to an appropriate volumetric flask, add a volume of *Buffer* equal to one-half of the total flask volume, and shake by mechanical means for 10 minutes to allow the Tablet to disintegrate completely. Dilute with methanol to volume, and sonicate for 15 minutes to obtain a solution having a concentration of about 0.05 mg of glipizide per mL. Filter through a solvent-resistant filter.

Chromatographic system (see Chromatography ⟨621⟩)—Proceed as directed in the *Assay.* Chromatograph the *Standard preparation,* and record the peak responses as directed under *Procedure:* the relative standard deviation for replicate injections is not more than 1.0%.

Procedure—Separately inject equal volumes (about 20 µL) of the *Standard preparation* and the *Test preparation* into the chromatograph, record the chromatograms, and measure the responses for the major peaks. Calculate the quantity, in mg, of $C_{21}H_{27}N_5O_4S$ in the Tablet taken by the formula:

$$CV(r_U/r_S)$$

in which C is the concentration, in mg per mL, of USP Glipizide RS in the *Standard preparation;* V is the volume, in mL, of the *Test preparation* taken; and r_U and r_S are the peak responses obtained from the *Test preparation* and the *Standard preparation,* respectively.

Related compounds—

Buffer and *Mobile phase*—Prepare as directed in the *Assay.*

Standard stock solution—Dissolve an accurately weighed quantity of USP Glipizide Related Compound A RS in methanol to obtain a solution having a known concentration of about 50 µg per mL.

Standard solution—Dissolve an accurately weighed quantity of USP Glipizide RS in methanol. To this solution add sufficient *Standard stock solution*, and dilute quantitatively with methanol to obtain a solution having known concentrations of about 100 µg per mL of USP Glipizide RS and about 0.5 µg per mL of USP Glipizide Related Compound A RS. Transfer 25 mL of this solution to a 50-mL volumetric flask, dilute with *Buffer* to volume, and mix.

Test solution—Use the *Assay preparation*.

Chromatographic system—Prepare as directed in the *Assay.* Chromatograph the *Standard solution*, and record the peak responses as directed for *Procedure:* the relative retention times are about 0.2 for glipizide related compound A and 1.0 for glipizide; the resolution, *R,* between glipizide related compound A and glipizide is not less than 1.5; and the relative standard deviation for replicate injections is not more than 5% for glipizide related compound A.

Procedure—Separately inject equal volumes (about 20 µL) of the *Standard solution* and the *Test solution* into the chromatograph, record the chromatograms, and measure the responses for the major peaks. Calculate the quantity, in mg, of N-{2-[(4-aminosulfonyl)phenyl]ethyl}-5-methyl-pyrazinecarboxamide (glipizide related compound A) in the Tablets taken by the formula:

$$100C(r_U/r_S)$$

in which C is the concentration, in mg per mL, of USP Glipizide Related Compound A RS in the *Standard solution;* and r_U and r_S are the peak responses of glipizide related compound A obtained from the *Test solution* and the *Standard solution*, respectively: not more than 2.0% of glipizide related compound A relative to the glipizide content, as determined in the *Assay*, is found.

Assay—

Buffer—Dissolve 13.8 g of monobasic sodium phosphate in water, and dilute with water to 1000 mL. Adjust with 2.0 N sodium hydroxide to a pH of 6.00 ± 0.05.

Mobile phase—Prepare a filtered and degassed mixture of *Buffer* and methanol (55:45). Make adjustments if necessary (see *System suitability* under Chromatography ⟨621⟩).

Standard preparation—Dissolve an accurately weighed quantity of USP Glipizide RS in methanol, and dilute quantitatively with methanol to obtain a solution having a known concentration of about 0.1 mg per mL. Transfer 25.0 mL of this solution to a 50-mL volumetric flask, dilute with *Buffer* to volume, and mix to obtain a solution having a known concentration of about 0.05 mg per mL.

Assay preparation—Weigh and finely powder not less than 20 Tablets. Transfer an accurately weighed portion of the powder, equivalent to about 5 mg of glipizide, to a 100-mL volumetric flask. Add 50 mL of methanol, and place in an ultrasonic bath for 15 minutes. Dilute with *Buffer* to volume, and place in the ultrasonic bath for an additional 15 minutes. Filter through a solvent-resistant filter.

Chromatographic system (see Chromatography ⟨621⟩)—The liquid chromatograph is equipped with a 225-nm detector and a 3.9-mm × 15-cm column that contains 5-µm packing L1. The flow rate is about 1.0 mL per minute. Chromatograph the *Standard preparation,* and record the peak responses as directed for *Procedure:* the relative standard deviation for replicate injections is not more than 1.0%.

Procedure—Separately inject equal volumes (about 20 µL) of the *Standard preparation* and the *Assay preparation* into the chromatograph, record the chromatograms, and measure the responses for the major peaks. Calculate the quantity, in mg, of $C_{21}H_{27}N_5O_4S$ in the portion of Tablets taken by the formula:

$$100C(r_U/r_S)$$

in which C is the concentration, in mg per mL, of USP Glipizide RS in the *Standard preparation;* and r_U and r_S are the peak responses obtained from the *Assay preparation* and the *Standard preparation,* respectively.

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

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

Chromatographic Database Information: Chromatographic Database

Most Recently Appeared In:
Pharmacopeial Forum: Volume No. Information currently unavailable

Current DocID: GUID-86541F1C-3687-4E9D-BBEC-BD81FD6D6361_1_en-US
DOI: https://doi.org/10.31003/USPNF_M35038_01_01
DOI ref: p9kvg