Voglibose Orally Disintegrating Tablets

ボグリボース口腔内崩壊錠

Voglibose Orally Disintegrating Tablets contain not less than 95.0% and not more than 105.0% of the labeled amount of voglibose ($C_{10}H_{21}NO_7$: 267.28).

Method of preparation Prepare as directed under Tablets, with Voglibose.

Identification To 10 tablets of Voglibose Orally Disintegrating Tablets add methanol so that each mL contains about 0.2 mg of voglibose ($C_{10}H_{21}NO_7$), sonicate while shaking to disintegrate the tablets completely. Filter this solution through a membrane filter with a pore size not exceeding 0.45 μm, discard the first 3 mL of the filtrate, and use the subsequent filtrate as the sample solution. Separately, dissolve about 10 mg of voglibose for assay in 2 mL of water, add methanol to make 50 mL, and use this solution as the standard solution. Perform the test with these solutions as directed under Thin-layer Chromatography <2.03>. Spot 10 μL each of the sample solution and standard solution on a plate of silica gel for thin-layer chromatography. Develop the plate with a mixture of methanol, acetone, water and ammonia solution (28) (10:10:4:1) to a distance of about 12 cm, and air-dry the plate. Then, immerse the plate in lead tetraacetate-fluorescein sodium TS, and lift gently to allow the excessive solution to flow out. After air-drying, examine under ultraviolet light (main wavelength: 366 nm): the spots obtained from the sample solution and standard solution exhibit a yellow fluorescence and show the same *R*f value.

Uniformity of dosage units <6.02> Perform the test according to the following method: it meets the requirement of the Content uniformity test.

To 1 tablet of Voglibose Orally Disintegrating Tablets add exactly *V* mL of the mobile phase so that each mL contains about 20 μg of voglibose ($C_{10}H_{21}NO_7$), and sonicate to disintegrate the tablet completely. Centrifuge this solution, and filter the supernatant liquid through a membrane filter with a pore size not exceeding 0.45 μm. Discard the first 5 mL of the filtrate, and use the subsequent filtrate as the sample solution. Then, proceed as directed in the Assay.

Amount (mg) of voglibose ($C_{10}H_{21}NO_7$)
$= M_S \times A_T / A_S \times V / 2500$

M_S: Amount (mg) of voglibose for assay taken, calculated on the anhydrous basis

Disintegration Being specified separately when the drug is granted approval based on the Law.

Dissolution <6.10> When the test is performed at 50 revolutions per minute according to the Paddle method, using 900 mL of water as the dissolution medium, the dissolution rate in 15 minutes of Voglibose Orally Disintegrating Tablets is not less than 85%.

Start the test with 1 tablet of Voglibose Orally Disintegrating Tablets, withdraw not less than 10 mL of the medium at the specified minute after starting the test, and filter through a membrane filter with a pore size not exceeding 0.45 μm. Discard not less than 5 mL of the first filtrate, pipet *V* mL of the subsequent filtrate, add the mobile phase to make exactly *V'* mL so that each mL contains about 0.11 μg of voglibose ($C_{10}H_{21}NO_7$), and use this solution as the sample solution. Separately, weigh accurately about 50 mg of voglibose for assay (separately determine the water <2.48> in the same manner as Voglibose), and dissolve in water to make exactly 50 mL. Pipet 1 mL of this solution, and add water to make exactly 100 mL. Pipet 2 mL of this solution, and add water to make exactly 100 mL. Pipet 10 mL of this solution, add the mobile phase to make exactly 20 mL, and use this solution as the standard solution. Perform the test with 100 μL each of the sample solution and standard solution as directed under Liquid Chromatography <2.01> according to the following conditions, and determine the peak areas, A_T and A_S, of voglibose in each solution.

Dissolution rate (%) with respect to the labeled amount of voglibose ($C_{10}H_{21}NO_7$)
$= M_S \times A_T / A_S \times V' / V \times 1 / C \times 9 / 50$

M_S: Amount (mg) of voglibose for assay taken, calculated on the anhydrous basis

C: Labeled amount (mg) of voglibose ($C_{10}H_{21}NO_7$) in 1 tablet

Operating conditions—

Apparatus, detector, column temperature, reaction coil, cooling coil, mobile phase, reaction reagent, reaction temperature, and flow rate of reaction reagent: Proceed as directed in the operating conditions in the Assay.

Column: A stainless steel column 4.6 mm in inside diameter and 7.5 cm in length, packed with polyamine silica gel for liquid chromatography (5 μm in particle diameter).

Flow rate of mobile phase: Adjust so that the retention time of voglibose is about 5 minutes.

System suitability—

System performance: When the procedure is run with 100 μL of the standard solution under the above operating conditions, the number of theoretical plates and the symmetry factor of the peak of voglibose are not less than 900 and not more than 1.5, respectively.

System repeatability: When the test is repeated 6 times with 100 μL of the standard solution under the above oper-

ating conditions, the relative standard deviation of the peak area of voglibose is not more than 3.0%.

Assay To 20 tablets of Voglibose Orally Disintegrating Tablets add 4*V*/5 mL of the mobile phase, and sonicate to disintegrate the tablets completely. Add the mobile phase to make exactly *V* mL so that each mL contains about 20 μg of voglibose ($C_{10}H_{21}NO_7$). Centrifuge this solution, and filter the supernatant liquid through a membrane filter with a pore size not exceeding 0.45 μm. Discard the first 5 mL of the filtrate, and use the subsequent filtrate as the sample solution. Separately, weigh accurately about 50 mg of voglibose for assay (separately determine the water <*2.48*> in the same manner as Voglibose), and dissolve in the mobile phase to make exactly 100 mL. Pipet 2 mL of this solution, add the mobile phase to make exactly 50 mL, and use this solution as the standard solution. Perform the test with 50 μL each of the sample solution and standard solution as directed under Liquid Chromatography <*2.01*> according to the following conditions, and determine the peak areas, A_T and A_S, of voglibose in each solution.

$$\text{Amount (mg) of voglibose } (C_{10}H_{21}NO_7) \text{ in 1 tablet} = M_S \times A_T / A_S \times V / 50000$$

M_S: Amount (mg) of voglibose for assay taken, calculated on the anhydrous basis

Operating conditions—

Apparatus: Use an apparatus consisting of 2 pumps for the mobile phase and reaction reagent transportation, sample injection port, column, reaction coil, cooling coil, detector and recording device, and the reaction coil and cooling coil maintained at a constant temperature.

Detector: A fluorophotometer (excitation wavelength: 350 nm, fluorescence wavelength: 430 nm).

Column: A stainless steel column 4.6 mm in inside diameter and 25 cm in length, packed with polyamine silica gel for liquid chromatography (5 μm in particle diameter).

Column temperature: A constant temperature of about 25°C.

Reaction coil: A polytetrafluoroethylene tube 0.5 mm in inside diameter and 20 m in length.

Cooling coil: A polytetrafluoroethylene tube 0.3 mm in inside diameter and 2 m in length.

Mobile phase: Dissolve 1.56 g of sodium dihydrogen phosphate dihydrate in 500 mL of water, and adjust to pH 6.5 with a solution prepared by dissolving 3.58 g of disodium hydrogen phosphate dodecahydrate in 500 mL of water. To 500 mL of this solution add 500 mL of acetonitrile.

Reaction reagent: Dissolve 6.25 g of taurine and 2.56 g of sodium periodate in water to make 1000 mL.

Reaction temperature: A constant temperature of about 100°C.

Cooling temperature: A constant temperature of about 25°C.

Flow rate of mobile phase: Adjust so that the retention time of voglibose is about 15 minutes.

Flow rate of reaction reagent: Same as the flow rate of the mobile phase.

System suitability—

System performance: When the procedure is run with 50 μL of the standard solution under the above operating conditions, the number of theoretical plates and the symmetry factor of the peak of voglibose are not less than 3000 and not more than 1.5, respectively.

System repeatability: When the test is repeated 6 times with 50 μL of the standard solution under the above operating conditions, the relative standard deviation of the peak area of voglibose is not more than 1.0%.

Containers and storage Containers—Tight containers.

Add the following to 9.41 Reagents, Test Solutions:

Lead tetraacetate $Pb(CH_3COOH)_4$ White to pale brown powder. Melting point: about 176°C (with decomposition).

Lead tetraacetate-fluorescein sodium TS To 5 mL of a solution of lead tetraacetate in acetic acid (100) (3 in 100) and 2.5 mL of fluorescein sodium in ethanol (99.5) (1 in 100) add dichloromethane to make 100 mL. Prepare before use.

Add the following to 9.42 Solid Supports/Column Packings for Chromatography:

Polyamine silica gel for liquid chromatography Prepared for liquid chromatography.