Felodipine Tablets

フェロジピン錠

Felodipine Tablets contain not less than 95.0% and not more than 105.0% of the labeled amount of felodipine ($C_{18}H_{19}Cl_2NO_4$: 384.25).

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

Identification To a quantity of powdered Felodipine Tablets, equivalent to 4 mg of Felodipine, add 200 mL of methanol, shake thoroughly, add methanol to make 250 mL, and centrifuge. Determine the absorption spectrum of the supernatant liquid as directed under Ultraviolet-visible Spectrophotometry *<2.24>*: it exhibits maxima between 235 nm and 239 nm, and between 357 nm and 363 nm.

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

To 1 tablet of Felodipine Tablets add 1 mL of water per 2.5 mg of felodipine ($C_{18}H_{19}Cl_2NO_4$), and shake thoroughly until the tablet is completely disintegrated. Add exactly 1 mL of the internal standard solution per 2.5 mg of felodipine ($C_{18}H_{19}Cl_2NO_4$), and add methanol to make V mL so that each mL contains about 0.25 mg of felodipine ($C_{18}H_{19}Cl_2NO_4$). Centrifuge this solution, filter the supernatant liquid, and use this filtrate as the sample solution. Separately, weigh accurately about 25 mg of felodipine for assay (separately determine the loss on drying *<2.41>* in the same conditions as Felodipine), add 10 mL of water, and add exactly 10 mL of the internal standard solution. Add methanol to make 100 mL, and use this solution as the standard solution. Then, proceed as directed in the Assay.

Amount (mg) of felodipine ($C_{18}H_{19}Cl_2NO_4$)
$= M_S \times Q_T / Q_S \times V / 100$

M_S: Amount (mg) of felodipine for assay taken, calculated on the dried basis

Internal standard solution—A solution of butyl parahydroxybenzoate in methanol (1 in 3000).

Dissolution *<6.10>* When the test is performed at 50 revolutions per minute according to the Paddle method, using 900 mL of a solution of polysorbate 80, prepared by dissolving 1 g of polysorbate 80 in 5000 mL of water, as the dissolution medium, the dissolution rates in 45 minutes of a 2.5-mg tablet and a 5-mg tablet are not less than 80% and not less than 75%, respectively.

Start the test with 1 tablet of Felodipine Tablets, withdraw not less than 20 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 the first 10 mL of the filtrate, pipet V mL of the subsequent filtrate, add the dissolution medium to make exactly V' mL so that each mL contains about 2.8 μg of felodipine ($C_{18}H_{19}Cl_2NO_4$), and use this solution as the sample solution. Separately, weigh accurately about 28 mg of felodipine for assay, and dissolve in methanol to make exactly 200 mL. Pipet 2 mL of this solution, add the dissolution medium to make exactly 100 mL, and use this solution as the standard solution. Perform the test with exactly 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 felodipine in each solution.

Dissolution rate (%) with respect to the labeled amount of felodipine ($C_{18}H_{19}Cl_2NO_4$)
$= M_S \times A_T / A_S \times V' / V \times 1 / C \times 9$

M_S: Amount (mg) of felodipine for assay taken
C: Labeled amount (mg) of felodipine ($C_{18}H_{19}Cl_2NO_4$) in 1 tablet

Operating conditions—

Column, column temperature, mobile phase and flow rate: Proceed as directed in the operating conditions in the Assay.

Detector: An ultraviolet absorption photometer (wave length: 238 nm).

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 felodipine 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 felodipine is not more than 2.0%.

Assay Weigh accurately the mass of not less than 20 Felodipine Tablets, and powder. Weigh accurately a portion of the powder, equivalent to about 10 mg of felodipine ($C_{18}H_{19}Cl_2NO_4$), add 20 mL of water, and add exactly 4 mL of the internal standard solution, and add methanol to make 100 mL. Centrifuge this solution, filter the supernatant liquid through a membrane filter with a pore size not exceeding 0.45 μm, and use the filtrate as the sample solution. Separately, weigh accurately about 10 mg of felodipine for assay (separately determine the loss on drying *<2.41>* in the same conditions as Felodipine), add 20 mL of water, add exactly 4 mL of the internal standard solution, add methanol to make 100 mL, and use this solution as the standard

solution. Perform the test with 20 μL each of the sample solution and standard solution as directed under Liquid Chromatography <2.01> according to the following conditions, and calculate the ratio, Q_T and Q_S, of the peak area of felodipine to that of the internal standard.

Amount of felodipine ($C_{18}H_{19}Cl_2NO_4$) = $M_S \times Q_T / Q_S$

M_S: Amount (mg) of felodipine for assay taken, calculated on the dried basis

Internal standard solution — A solution of butyl parahydroxybenzoate in methanol (1 in 6000).

Operating conditions —

Detector: An ultraviolet absorption photometer (wave length: 264 nm).

Column: A stainless steel column 4.6 mm in inside diameter and 15 cm in length, packed with octadecylsilanized silica gel for liquid chromatography (5 μm in particle diameter).

Column temperature: A constant temperature of about 25℃.

Mobile phase: A mixture of methanol, water, a solution of sodium perchlorate monohydrate (281 in 2000) and diluted perchloric acid (17 in 200) (65: 25: 8: 2)

Flow rate: Adjust so that the retention time of felodipine is about 12 minutes.

System suitability —

System performance: When the procedure is run with 20 μL of the standard solution under the above operating conditions, the internal standard and felodipine are eluted in this order with the resolution between these peaks being not less than 5.

System repeatability: When the test is repeated 6 times with 20 μL of the standard solution under the above operating conditions, the relative standard deviation of the ratio of the peak area of felodipine to that of the internal standard is not more than 1.0%.

Containers and storage Containers — Tight containers.

Add the following to 9.41 Reagents, Test Solutions:

Felodipine for assay [Same as the monograph Felodipine. It contains not less than 99.5% of felodipine ($C_{18}H_{19}Cl_2NO_4$), calculated on the dried basis.]