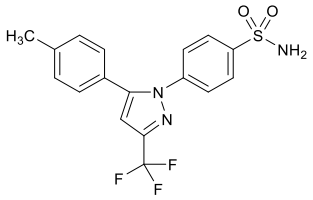
Celecoxib

セレコキシブ



$C_{17}H_{14}F_3N_3O_2S$: 381.37

4-[5-(4-Methylphenyl)-3-(trifluoromethyl)-1*H*-pyrazol-1-yl] benzenesulfonamide

[*169590-42-5*]

Celecoxib contains not less than 98.0% and not more than 102.0% of celecoxib ($C_{17}H_{14}F_3N_3O_2S$), calculated on the anhydrous basis.

Description Celecoxib occurs as a white, powder or crystalline powder.

It is freely soluble in methanol, soluble in ethanol (99.5), and practically insoluble in water.

Melting point: 161 – 164℃

Celecoxib shows crystal polymorphism.

Identification (1) Determine the absorption spectrum of a solution of Celecoxib in methanol (1 in 100,000) as directed under Ultraviolet-visible Spectrophotometry *<2.24>*, and compare the spectrum with the Reference Spectrum or the spectrum of a solution of Celecoxib RS prepared in the same manner as the sample solution: both spectra exhibit similar intensities of absorption at the same wavelengths.

(2) Determine the infrared absorption spectrum of Celecoxib, as directed in the potassium bromide disk method under Infrared Spectrophotometry *<2.25>*, and compare the spectrum with the Reference Spectrum or the spectrum of Celecoxib RS: both spectra exhibit similar intensities of absorption at the same wave numbers.

Purity (1) Heavy metals *<1.07>*—Proceed with 1.0 g of Celecoxib according to Method 4, and perform the test. Prepare the control solution with 2.0 mL of Standard Lead Solution (not more than 20 ppm).

(2) Related substances—Use the sample solution obtained in the Assay as the sample solution. Separately, weigh accurately about 50 mg of Celecoxib RS, dissolve in a mixture of methanol and water (3:1) to make exactly 100 mL. Pipet 1 mL of this solution, add a mixture of methanol and water (3:1) to make exactly 100 mL, and use this solution as the standard solution. Perform the test with exactly 25 μL each of the sample solution and standard solution as directed under Liquid Chromatography *<2.01>* according to the following conditions. Determine each peak area, A_T, in the sample solution and the peak area of celecoxib, A_S, in the standard solution by the automatic integration method, and calculate the amount of the related substances by the following equation: the amount of the related substance A having the relative retention time of about 0.94 to celecoxib is not more than 0.4%, and each amount of the related substances other than the related substance A is not more than 0.10%. Furthermore, the total amount of the related substances is not more than 0.5%.

Amount (%) of related substance $= M_S / M_T \times A_T / A_S$

M_S: Amount (mg) of Celecoxib RS taken

M_T: Amount (mg) of Celecoxib taken

Operating conditions—

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

Time span of measurement: About 1.5 times as long as the retention time of celecoxib, beginning after the solvent peak.

System suitability—

System performance and system repeatability: Proceed as directed in the system suitability in the Assay.

Test for required detectability: Pipet 5 mL of the standard solution, and add a mixture of methanol and water (3:1) to make exactly 100 mL. Confirm that the peak area of celecoxib obtained with 25 μL of this solution is equivalent to 3.5 to 6.5% of that with 25 μL of the standard solution.

Water *<2.48>* Not more than 0.5% (0.3 g, volumetric titration, direct titration).

Residue on ignition *<2.44>* Not more than 0.2% (1.0 g, platinum crucible).

Assay Weigh accurately about 50 mg each of Celecoxib and Celecoxib RS, and dissolve each in a mixture of methanol and water (3:1) to make exactly 100 mL, and use these solutions as the sample solution and the standard solution, respectively. Perform the test with exactly 25 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 celecoxib in each solution.

Amount (mg) of celecoxib ($C_{17}H_{14}F_3N_3O_2S$) $= M_S \times A_T / A_S$

M_S: Amount (mg) of Celecoxib RS taken

Operating conditions—

Detector: An ultraviolet absorption photometer (wavelength: 215 nm).

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

Column temperature: A constant temperature of about 60℃.

Mobile phase: Adjust 0.02 mol/L potassium dihydrogen phosphate TS to pH 3.0 with phosphoric acid. To 600 mL of this solution add 300 mL of methanol for liquid chromatography and 100 mL of acetonitrile for liquid chromatography.

Flow rate: Adjust so that the retention time of celecoxib is about 22 minutes.

System suitability—

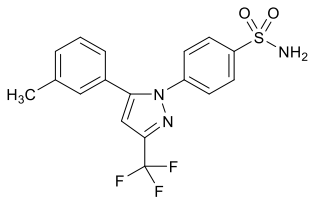
System performance: When the procedure is run with 25 μL of the standard solution under the above operating conditions, the number of theoretical plates and the symmetry factor of the peak of celecoxib are not less than 6000 and not more than 2.0, respectively.

System repeatability: When the test is repeated 6 times with 25 μL of the standard solution under the above operating conditions, the relative standard deviation of the peak area of celecoxib is not more than 1.0%.

Containers and storage Containers—Well-closed containers.

Others

Related substance A:
4-[5-(3-Methylphenyl)-3-(trifluoromethyl)-1*H*-pyrazol-1-yl]benzenesulfonamide



Add the following to 9.01 Reference Standards (1):

Celecoxib RS