Government of Nepal
Ministry of Health and Population
Department of Drug Administration
National Medicines Laboratory
Quality and Method Validation Section

Analytical profile of Diclofenac Sodium Suppositories

Analytical Profile No.: Diclo 079/080/AP 118

Diclofenac Sodium Suppositories contains not less than 95.0% and not more than 105.0% of the stated amount of Diclofenac Sodium.

1. Identification:

In the Assay, the principle peak in the chromatogram obtained with the test solution corresponds to the peak in the chromatogram obtained with the reference solution.

2. Dissolution: *Deteremine by liquid chromatography*

2.1 Dissolution Parameters:

Apparatus: Paddle with sinker

Medium: 900 ml of mixed phosphate buffer pH 6.8 (±0.03)

Speed and Time: 100 rpm and 45 minutes

Withdraw a suitable volume of the medium and filter.

2.2 Mixed phosphate buffer pH 6.8: Dissolve 28.80 g of disodium hydrogen phosphate and 11.45 gm of potassium dihydrogen phosphate in 1000 ml of purified water. If necessary, adjust pH 6.8

2.3 Test Solution: Dilute 5 ml of filtered solution to 50 ml with dissolution media.

2.4 Reference Solution: Weigh accurately 50.0 mg of Diclofenac sodium WS to a 100 ml volumetric flask. Add about 5 ml of methanol and sonicate till it dissolves. Make up the volume with dissolution media. Dilute 2 ml to 100ml in dissolution medium.

2.5 Chromatographic system:

Column: PrincetonSPHER C8 (4.6mmX 250mm, 5µ)

Flow rate: 0.5 ml/min

Wavelength: 275 nm

Injection volume: 10µl

Mobile Phase: A mixture of 780 volumes of Acetonitrile and 220 volumes of phosphate buffer pH 2.5.

2.5 pH phosphate Buffer: Prepare a mixture of a solution containing 0.5g/l of phosphoric acid and 0.8 g/l of sodium phosphate; adjust to pH 2.5 with orthophosphoric acid.

2.6 Procedure: Inject the reference solution five times and sample solutions. The test is not valid unless the column efficiency is not less than 2000 theoretical plates, tailing factor is not more than 2.0, and the relative standard deviation for replicate injections is not more than 2.0%. Measure the peak responses. Calculate the percent release of Diclofenac Sodium.

2.6 Limit: Not less than 70 percent (D) of the stated amount of Diclofenac Sodium.

3. Assay: *Determine by liquid chromatography*

3.1 Diluent: A mixture of 70 volumes of methanol and 30 volumes of Water.

3.2 Test solution: Melt 10 suppositories in a glass beaker on water bath. Mix thoroughly using a glass rod and cool to room temperature under stirring for uniform mixing. Weigh accurately about 1.8000 g of sample equivalent to 100 mg Diclofenac Sodium, transfer in a 100ml volumetric flask, add about 80 ml of diluent, sonicate about 30 minutes in ultrasonic bath to dissolve, cool at room temperature and make up the volume 100 ml with diluent and mix thoroughly. Filter the solution with nylon membrane filter 0.22 µm. Dilute 5 ml of filtrate to 50 ml with diluent in a volumetric flask and mix thoroughly.

3.3 Reference solution: Weigh accurately 100 mg of Diclofenac Sodium WS in 100 ml of volumetric flask. Add about 70 ml of diluent, sonicate to dissolve, cool to room temperature & make up the volume with diluent. Dilute 5 ml of this solution to 50 ml with diluent.

3.4 Chromatographic system:

Column: PrincetonSPHER C8 (4.6mmX 250mm, 5µ)

Flow rate: 1.0 ml/min

Wavelength: 254 nm

Injection volume: 10µl

Mobile Phase: A mixture of 70 volume of methanol and 30 volume of Phosphate buffer pH 2.5

Preparation of 0.01M phosphoric acid:

Dilute 0.57 ml of phosphoric acid with 1000 ml of water.

Preparation of 0.01M monobasic sodium phosphate:

Weigh accurately about 1.3799g of Sodium Dihydrogen phosphate monohydrate dissolved in water and make up the volume 1000 ml in a volumetric flask.

Preparation of pH 2.5 Phosphate Buffer:

Mix equal volume of 0.01M phosphoric acid and 0.01M monobasic sodium phosphate. If necessary, adjust the pH to 2.5±0.2 with additional proportion of appropriate component.

3.5 Procedure: Inject the reference solution five times and sample solutions. The test is not valid unless the column efficiency is not less than 2000 theoretical plates, tailing factor is not more than 2.0, and the relative standard deviation for replicate injections is not more than 2.0%. Measure the peak responses. Calculate the content of Diclofenac Sodium in Diclofenac Sodium Suppositories.

4. Other tests: As per pharmacopoeial requirements.