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# Diclofenac Gastro-resistant Tablets

General Notices

Diclofenac Tablets
Gastro-resistant Diclofenac Tablets

**Action and use**

Cyclo-oxygenase inhibitor; analgesic; anti-inflammatory.

## DEFINITION

Diclofenac Gastro-resistant Tablets contain Diclofenac Sodium. They are made gastro-resistant by enteric-coating or by other means.

*The tablets comply with the requirements stated under Tablets and with the following requirements.*

**Content of diclofenac sodium, $C_{14}H_{10}Cl_2NNaO_2$**

95.0 to 105.0% of the stated amount.

## IDENTIFICATION

Remove the coating from 10 tablets and powder the cores. Add 0.5 mL of *glacial acetic acid* and 15 mL of *methanol* to a quantity of the powdered tablet cores containing 0.15 g of Diclofenac Sodium and mix with the aid of ultrasound. Shake gently for 1 minute, filter and collect the filtrate in 15 mL of *water*. Filter the precipitate under reduced pressure (a Whatman GF/C filter paper is suitable), wash with four 5-mL quantities of *water* and dry at 105° for 2 to 3 hours. The *infrared absorption spectrum* of the dried precipitate, Appendix II A, is concordant with the *reference spectrum* of diclofenac *(RS 096)*.

## TESTS

**Related substances**

Carry out the method for *liquid chromatography*, Appendix III D, using the following solutions.

(1) Shake a quantity of the powdered tablets containing 50 mg of Diclofenac Sodium with 70 mL of the mobile phase for 30 minutes, add sufficient of the mobile phase to produce 100 mL, mix, centrifuge an aliquot and filter the supernatant liquid through a 0.45-µm filter.
(2) Dilute 1 volume of solution (1) to 100 volumes with the mobile phase and dilute 1 volume of this solution to 5 volumes with the mobile phase.
(3) 0.0005% w/v of *diclofenac sodium BPCRS* and 0.0005% w/v of *diclofenac impurity A BPCRS* in the mobile phase.

CHROMATOGRAPHIC CONDITIONS

(a) Use a stainless steel column (25 cm × 4.6 mm) packed with *end-capped octadecylsilyl silica gel for chromatography* (5 µm) (YMC Pack-pro C18 is suitable).

(b) Use isocratic elution and the mobile phase described below.
(c) Use a flow rate of 1 mL per minute.
(d) Use an ambient column temperature.
(e) Use a detection wavelength of 254 nm.
(f) Inject 20 µL of each solution.
(g) Allow the chromatography to proceed for 1.5 times the retention time of diclofenac.

MOBILE PHASE

34 volumes of a mixture of equal volumes of a 0.1% w/v solution of *orthophosphoric acid* and a 0.16% w/v solution of *sodium dihydrogen orthophosphate*, adjusted to pH 2.5, and 66 volumes of *methanol*.

When the chromatograms are recorded under the prescribed conditions, the relative retentions with reference to diclofenac (retention time about 25 minutes) are: impurity A, about 0.4 and impurity F, about 0.8.

SYSTEM SUITABILITY

The test is not valid unless, in the chromatogram obtained with solution (3), the *resolution* between the peaks corresponding to diclofenac and diclofenac impurity A is at least 6.5.

LIMITS

Identify the peak due to impurity A using the chromatogram obtained with solution (3) and multiply the area of this peak by a correction factor of 0.7. Identify the peak due to impurity F using the relative retention time and multiply the area of this peak by a correction factor of 0.3.

In the chromatogram obtained with solution (1):

the area of any *secondary peak* is not greater than the area of the principal peak in the chromatogram obtained with solution (2) (0.2%);

the sum of the areas of the *secondary peaks* is not greater than 2.5 times the area of the principal peak in the chromatogram obtained with solution (2) (0.5%).

Disregard any peak with an area less than 0.25 times the area of the principal peak in the chromatogram obtained with solution (2) (0.05%).

## ASSAY

Carry out the method for *liquid chromatography*, Appendix III D, using the following solutions.

(1) Shake 10 tablets with 700 mL of *methanol (50%)* for 30 minutes with the aid of ultrasound, add sufficient mobile phase to produce 1000 mL, centrifuge an aliquot and filter the supernatant liquid through a 0.45-µm filter. Dilute the filtrate with the mobile phase to produce a solution containing 0.005% w/v of Diclofenac Sodium.
(2) 0.005% w/v of *diclofenac sodium BPCRS* in the mobile phase.
(3) 0.0005% w/v of *diclofenac sodium BPCRS* and 0.0005% w/v of *diclofenac impurity A BPCRS* in the mobile phase.

CHROMATOGRAPHIC CONDITIONS

(a) Use a stainless steel column (25 cm × 4.6 mm) packed with *end-capped octadecylsilyl silica gel for chromatography* (5 µm) (YMC Pack-pro C18 is suitable).
(b) Use isocratic elution and the mobile phase described below.
(c) Use a flow rate of 1 mL per minute.
(d) Use an ambient column temperature.
(e) Use a detection wavelength of 254 nm.
(f) Inject 20 µL of each solution.

MOBILE PHASE

20 volumes of a mixture of equal volumes of a 0.1% w/v solution of *orthophosphoric acid* and a 0.16% w/v solution of *sodium dihydrogen orthophosphate*, adjusted to pH 2.5, and 80 volumes of *methanol*.

When the chromatograms are recorded under the prescribed conditions, the retention times are about 5 minutes for diclofenac and about 4 minutes for diclofenac impurity A.

SYSTEM SUITABILITY

The Assay is not valid unless, in the chromatogram obtained with solution (3), the *resolution* between the peaks corresponding to diclofenac and diclofenac impurity A is at least 2.0.

DETERMINATION OF CONTENT

Calculate the content of $C_{14}H_{10}Cl_2NNaO_2$ in the tablets using the declared content of $C_{14}H_{10}Cl_2NNaO_2$ in *diclofenac sodium BPCRS*.

## STORAGE

Diclofenac Gastro-resistant Tablets should be protected from moisture.

## IMPURITIES

The impurities limited by the requirements of this monograph include those listed under Diclofenac Sodium.