Edition: BP 2025 (Ph. Eur. 11.6 update)

Ofloxacin Tablets

General Notices

Action and use

Fluoroquinolone antibacterial.

DEFINITION

Ofloxacin Tablets contain Ofloxacin.

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

Content of ofloxacin, $C_{18}H_{20}FN_3O_4$

95.0 to 105.0% of the stated amount.

IDENTIFICATION

In the Assay, record the UV spectrum of the principal peak in the chromatograms obtained with solutions (1) and (2) with a diode array detector in the range of 210 to 400 nm.

The UV spectrum of the principal peak in the chromatogram obtained with solution (1) is concordant with that of the peak in the chromatogram obtained with solution (2);

the retention time of the principal peak in the chromatogram obtained with solution (1) is similar to that of the peak in the chromatogram obtained with solution (2).

TESTS

Dissolution

Comply with the *dissolution test for tablets and capsules*, Appendix XII B1.

TEST CONDITIONS

(a) Use Apparatus 2, rotating the paddle at 50 revolutions per minute.
(b) Use 900 mL of 0.1M *hydrochloric acid*, at a temperature of 37°, as the medium.

PROCEDURE

(1) After 30 minutes withdraw a sample of the medium and measure the *absorbance* of the filtered sample, suitably diluted with the dissolution medium, if necessary, to produce a solution expected to contain 0.0009% w/v of Ofloxacin at the maximum at 294 nm, Appendix II B, using dissolution medium in the reference cell.
(2) Measure the *absorbance* of a 0.0009% w/v solution of *ofloxacin BPCRS* in the dissolution medium using dissolution medium in the reference cell.

DETERMINATION OF CONTENT

Calculate the total content of ofloxacin, $C_{18}H_{20}FN_3O_4$, in the medium from the chromatograms obtained and using the declared content of $C_{18}H_{20}FN_3O_4$ in *ofloxacin BPCRS*.

LIMITS

The amount of ofloxacin released is not less than 75% (Q) of the stated amount.

Related substances

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

Solution A 10 volumes of *acetonitrile* and 90 volumes of 0.01M *hydrochloric acid*.

Solution B 0.308% w/v of *ammonium acetate* and 0.538% w/v of *sodium perchlorate* in *water*, adjusted to pH 2.2 using *orthophosphoric acid*.

(1) Disperse a quantity of the powdered tablets containing 40 mg of Ofloxacin in solution A. Mix with the aid of ultrasound, dilute to 100 mL and filter (a 0.45 µm Millex-HV filter is suitable).
(2) Dilute 1 volume of solution (1) to 200 volumes.
(3) 0.00008% w/v each of *ofloxacin impurity D EPCRS* and *ofloxacin impurity E EPCRS* and 0.0002% w/v of *ofloxacin BPCRS*.
(4) Dilute 1 volume of solution (2) to 5 volumes.

CHROMATOGRAPHIC CONDITIONS

(a) Use a stainless steel column (15 cm × 4.6 mm) packed with *end-capped octadecylsilyl silica gel for chromatography* (3 µm) (YMC Pack Pro C18 is suitable).
(b) Use gradient elution and the mobile phase described below.
(c) Use a flow rate of 1.0 mL per minute.
(d) Use a column temperature of 38°.
(e) Use a detection wavelength of 294 nm.
(f) Inject 10 µL of each solution.

MOBILE PHASE

Mobile phase A 16 volumes of *acetonitrile* and 84 volumes of solution B.

Mobile phase B 20 volumes of *methanol*, 30 volumes of *acetonitrile* and 50 volumes of solution B.

Time (Minutes)	Mobile phase A (% v/v)	Mobile phase B (% v/v)	Comment
0-5	100	0	isocratic
5-10	100→82	0→18	linear gradient
10-15	82→40	18→60	linear gradient
15-30	40	60	isocractic
30-32	40→100	60→0	linear gradient
32-40	100	0	re-equilibration

SYSTEM SUITABILITY

The test is not valid unless:

in the chromatogram obtained with solution (3), the *resolution* between the peaks due to impurity E and ofloxacin is at least 2.0 and;

in the chromatogram obtained with solution (4), the *signal-to-noise ratio* of the peak due to ofloxacin is at least 90.

CALCULATION OF IMPURITIES

For each impurity, use the concentration of ofloxacin in solution (2).

For the reporting threshold, use the concentration of ofloxacin in solution (4).

For peak identification, use solution (3).

Ofloxacin retention time: about 10 minutes.

Relative retention: impurity D, about 0.7; impurity E, about 0.9.

Correction factors: impurity D, multiply by 4.5.

LIMITS

— impurity D: not more than 0.2%;

— any other impurities: not more than 0.2%;

— total impurities: not more than 0.5%;

— reporting threshold: 0.1%.

ASSAY

Weigh and powder 20 tablets. Carry out the method for *liquid chromatography*, Appendix III D, using the following solutions.

(1) Disperse a quantity of the powdered tablets containing 0.1 g of Ofloxacin in *methanol*, dilute to 100 mL with *methanol* and filter (a GF/C filter is suitable). Dilute 1 volume of the filtrate to 100 volumes with 10% v/v of *acetonitrile*.
(2) Prepare a 0.1% w/v solution of *ofloxacin BPCRS* in *methanol* and dilute 1 volume of this solution to 100 volumes with 10% v/v of *acetonitrile*.

CHROMATOGRAPHIC CONDITIONS

(a) Use a stainless steel column (10 cm × 4.6 mm) packed with *end-capped octadecylsilyl silica gel for chromatography* (3.5 µm) (Symmetry C18 is suitable).
(b) Use isocratic elution and the mobile phase described below.
(c) Use a flow rate of 2.0 mL per minute.
(d) Use an ambient column temperature.
(e) Use a detection wavelength of 294 nm.
(f) Inject 20 µL of each solution.

MOBILE PHASE

10 volumes of *acetonitrile* and 90 volumes of a solution containing 2.72% w/v of *potassium dihydrogen orthophosphate*, previously adjusted to pH 3.3 with *orthophosphoric acid*.

SYSTEM SUITABILITY

The test is not valid unless, in the chromatogram obtained with solution (2), the *symmetry factor* of the principal peak is not greater than 2.0.

DETERMINATION OF CONTENT

Calculate the content of ofloxacin, $C_{18}H_{20}FN_3O_4$, in the tablets from the chromatograms obtained and using the declared content of $C_{18}H_{20}FN_3O_4$ in *ofloxacin BPCRS*.

IMPURITIES

The impurities limited by the requirements of this monograph include impurities B, C, D, E and F listed under *Ofloxacin*.