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

Levofloxacin Tablets

General Notices

Action and use

Fluoroquinolone antibacterial.

DEFINITION

Levofloxacin Tablets contain Levofloxacin Hemihydrate.

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

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

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 1, rotating the basket at 100 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 the equivalent of 0.027% w/v of levofloxacin, at the maximum at 293nm, Appendix II B, using dissolution medium in the reference cell.
(2) Measure the *absorbance* of a 0.027% w/v solution of *levofloxacin hemihydrate BPCRS* in the dissolution medium using dissolution medium in the reference cell.

DETERMINATION OF CONTENT

Calculate the total content of levofloxacin, $C_{18}H_{20}FN_3O_4$ in the medium from the absorbances obtained and using the declared content of $C_{18}H_{20}FN_3O_4,½H_2O$, in *levofloxacin hemihydrate BPCRS*. Each mg of $C_{18}H_{20}FN_3O_4,½H_2O$ is equivalent to 0.9757 mg of $C_{18}H_{20}FN_3O_4$.

LIMITS

The amount of levofloxacin 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 in the mobile phase.

(1) Disperse a quantity of the powdered tablets containing the equivalent of 0.5 g of levofloxacin with 75 mL of 20% v/v of *acetonitrile*. Dilute with 20% v/v of *acetonitrile* to produce 100 mL and filter. Dilute 1 volume to 10 volumes.
(2) Dilute 1 volume of solution (1) to 200 volumes.
(3) Dissolve the contents of a vial of *levofloxacin for system suitability EPCRS* in 1 mL.
(4) Dilute 1 volume of solution (2) to 5 volumes.

CHROMATOGRAPHIC CONDITIONS

(a) Use a stainless steel column (25 cm × 4.6 mm) packed with *base-deactivated end-capped octadecylsilyl silica gel for chromatography* (5 µm) (Inertsil ODS is suitable).
(b) Use isocratic elution and the mobile phase described below.
(c) Use a flow rate of 0.8 mL per minute.
(d) Use a column temperature of 45°.
(e) Use a detection wavelength of 360 nm.
(f) Inject 25 µL of each solution.
(g) Allow the chromatography to proceed for three times the retention time of levofloxacin.

MOBILE PHASE

0.0875% w/v of *copper sulphate pentahydrate*, 0.091% w/v of *isoleucine* and 0.595% w/v of *ammonium acetate* in 30% v/v of *methanol*.

SYSTEM SUITABILITY

The test is not valid unless, in the chromatogram obtained with solution (3), the *resolution* between the peaks due to impurities B and G is at least 1.5.

CALCULATION OF IMPURITIES

For all impurities, use the concentration of levofloxacin in solution (2).

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

For peak identification, use solution (3).

Levofloxacin retention time: about 20 minutes.

Relative retention: impurity E, about 0.4; impurity B, about 0.5; impurity G, about 0.56; impurity 1, about 0.63; impurity A, about 1.2.

Correction factors: impurity B, multiply by 1.3; impurity E, multiply by 1.7.

LIMITS

— impurity A: not more than 0.5%;

— unspecified impurities: for each impurity, not more than 0.2%;

— total impurities: not more than 1.0%;

— reporting threshold: 0.1%.

ASSAY

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

(1) Disperse a quantity of the whole tablets containing the equivalent of 2.5 g of levofloxacin in 375 mL of 20% v/v of *acetonitrile*. Dilute with 20% v/v of *acetonitrile* to produce 500 mL and filter. Dilute 1 volume to 25 volumes with the mobile phase.
(2) 0.2% w/v of *levofloxacin hemihydrate BPCRS* in 20% v/v of *acetonitrile*, dissolved with the aid of ultrasound if necessary. Dilute 1 volume to 10 volumes with the mobile phase.

CHROMATOGRAPHIC CONDITIONS

The chromatographic conditions described under Related substances may be used.

DETERMINATION OF CONTENT

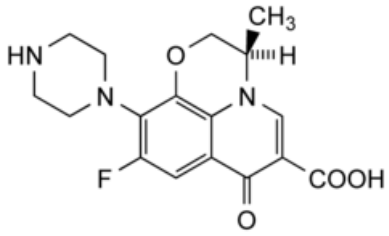
Calculate the content of $C_{18}H_{20}FN_3O_4$ in the tablets using the declared content of $C_{18}H_{20}FN_3O_4,½H_2O$ in *levofloxacin hemihydrate BPCRS*. Each mg of $C_{18}H_{20}FN_3O_4,½H_2O$ is equivalent to 0.9757 mg of $C_{18}H_{20}FN_3O_4$.

LABELLING

The quantity of active ingredient is stated in terms of the equivalent amount of levofloxacin.

IMPURITIES

The impurities limited by the requirements of this monograph include impurities A, B, C, D, E, G, H and I listed under *Levofloxacin Hemihydrate* and:



1. (*S*)-4-(6-Carboxy-9-fluoro-2,3-dihydro-3-methyl-7-oxo-7*H*-pyrido-[1,2,3-*de*][1,4]benzoxazine-10-yl)-1-methylpiperazine 1-oxide (N-Oxide)