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

Abacavir Tablets

General Notices

Action and use

Nucleoside reverse transcriptase inhibitor; antiviral (HIV).

DEFINITION

Abacavir Tablets contain Abacavir Sulfate. They may be coated.

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

Content of abacavir, $C_{14}H_{18}N_6O$

95.0 to 105.0% of the stated amount.

IDENTIFICATION

A. Carry out the method for *thin-layer chromatography*, Appendix III A, using the following solutions in *water*.
(1) Shake a quantity of powdered tablets containing the equivalent of 0.2 g of abacavir with 100 mL, filter and use the filtrate.
(2) 0.23% w/v of *abacavir sulfate BPCRS*.
(3) 0.23% w/v of *abacavir sulfate BPCRS* and 0.2% w/v of *zidovudine BPCRS*.

CHROMATOGRAPHIC CONDITIONS

(a) Use precoated *silica gel F_{254}* plates (Merck silica gel 60 F_{254} plates are suitable).
(b) Use the mobile phase described below.
(c) Apply 10 µL of each solution.
(d) Develop the plate to 12 cm.
(e) After removal of the plate, dry it in air and immediately examine under *ultraviolet light (254 nm)*.

MOBILE PHASE

3 volumes of *glacial acetic acid*, 10 volumes of *methanol* and 90 volumes of *dichloromethane*.

SYSTEM SUITABILITY

The test is not valid unless the chromatogram obtained with solution (3) shows two clearly separated spots.

CONFIRMATION

The chromatogram obtained with solution (1) shows a principal spot corresponding in position and size to the principal spot in the chromatogram obtained with solution (2).

B. In the Assay, the chromatogram obtained with solution (1) shows a principal peak with the same retention time as the principal 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 and rotate the paddle at 75 revolutions per minute.
(b) Use 900 mL of *0.1M hydrochloric acid* as the medium at a temperature of 37°.

PROCEDURE

(1) After 45 minutes withdraw a 10-mL sample of the medium and filter. Measure the *absorbance* of the filtered medium, diluted if necessary with 0.1M *hydrochloric acid*, at the maximum at 254 nm using *0.1M hydrochloric acid* in the reference cell, Appendix II B.
(2) Measure the *absorbance* of a solution containing 0.039% w/v of *abacavir sulfate BPCRS* in *0.1M hydrochloric acid* at the maximum at 254 nm using *0.1M hydrochloric acid* in the reference cell.

DETERMINATION OF CONTENT

Calculate the total content of abacavir, $C_{14}H_{18}N_6O$, in the medium using the declared content of $C_{14}H_{18}N_6O$ in *abacavir sulfate BPCRS*.

LIMITS

The amount of abacavir 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 0.1% v/v of *orthophosphoric acid*.

(1) Shake a quantity of the powdered tablets containing the equivalent of 0.3 g of abacavir with 70 mL for 30 minutes, mix with the aid of ultrasound for 5 minutes; dilute to 100 mL and filter through a 0.45-µm filter (polyvinylidene fluoride is suitable). Dilute 1 volume of the filtrate to 20 volumes.
(2) Dilute 1 volume of solution (1) to 100 volumes and further dilute 1 volume of the resulting solution to 5 volumes.
(3) Dissolve 2.5 mg of *abacavir for peak identification EPCRS* in 10.0 mL.

CHROMATOGRAPHIC CONDITIONS

(a) Use a stainless steel column (15 cm × 3.9 mm) packed with *octadecylsilyl silica gel for chromatography* (5 µm) (Waters Symmetry Shield C18 is suitable).
(b) Use gradient elution and the mobile phase described below.
(c) Use a flow rate of 0.8 mL per minute.
(d) Use a column temperature of 30°.
(e) Use a detection wavelength of 254 nm.
(f) Inject 10 µL of each solution.

MOBILE PHASE

Mobile phase A 0.05% v/v of *trifluoroacetic acid*.

Mobile phase B *methanol (85%)*.

Time (Minutes)	Mobile phase A (% v/v)	Mobile phase B (% v/v)	Comment
0-20	95→70	5→30	linear gradient
20-35	70→10	30→90	linear gradient
35-40	10	90	isocratic
40-41	10→0	90→100	column wash
41-50	0	100	column wash
50-51	0→95	100→5	column wash
51-55	95	5	re-equilibration

SYSTEM SUITABILITY

The test is not valid unless, in the chromatogram obtained with solution (3):

the chromatogram closely resembles the reference chromatogram supplied with *abacavir for peak identification EPCRS*;

the *resolution* between the peaks due to abacavir and abacavir impurity D is at least 1.5.

LIMITS

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 all *secondary peaks* is not greater than 8 times the area of the principle peak in the chromatogram obtained with solution (2) (1.6%).

Disregard any peak with an area less than 0.5 times the area of the principal peak in the chromatogram obtained with solution (2) (0.1%).

ASSAY

Weigh and powder 20 tablets. Carry out the method for *liquid chromatography*, Appendix III D, in 0.1% v/v of *orthophosphoric acid*.

(1) Shake a quantity of the powdered tablets containing the equivalent of 0.1 g of abacavir with 70 mL for 30 minutes, dilute to 100 mL and filter. Dilute 1 volume of the filtrate to 5 volumes.
(2) 0.023% w/v of *abacavir sulfate BPCRS*.
(3) Dissolve 2.5 mg of *abacavir for peak identification EPCRS* in 10 mL.

CHROMATOGRAPHIC CONDITIONS

The chromatographic conditions described under Related substances may be used.

SYSTEM SUITABILITY

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

DETERMINATION OF CONTENT

Calculate the content of $C_{14}H_{18}N_6O$ in the tablets from the chromatograms obtained using the declared content of $C_{14}H_{18}N_6O$ in *abacavir sulfate BPCRS*.

LABELLING

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

IMPURITIES

The impurities limited by the requirements of this monograph include those listed under Abacavir Sulfate.