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

Zidovudine Tablets

General Notices

Action and use

Nucleoside reverse transcriptase inhibitor; antiviral (HIV).

DEFINITION

Zidovudine Tablets contain Zidovudine.

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

Content of zidovudine, $C_{10}H_{13}N_5O_4$

95.0 to 105.0% of the stated amount.

IDENTIFICATION

Shake a quantity of the powdered tablets containing 0.2 g of Zidovudine with 50 mL of *methanol*, filter and evaporate the filtrate to dryness. The *infrared absorption spectrum* of the residue, Appendix II A, is concordant with the *reference spectrum* of zidovudine (*RS 447*).

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 50 revolutions per minute.
(b) Use 900 mL of *water*, at a temperature of 37°, as the medium.

PROCEDURE

After 45 minutes withdraw a 10-mL sample of the medium and filter. Measure the *absorbance* of the filtered medium, diluted if necessary with *water*, at the maximum at 266 nm using *water* in the reference cell, Appendix II B. Calculate the total content of zidovudine $C_{10}H_{13}N_5O_4$, in the medium from the *absorbance* obtained from a 0.0017% w/v solution of *zidovudine BPCRS* in *water* and using the declared content of $C_{10}H_{13}N_5O_4$ in *zidovudine BPCRS*.

LIMITS

The amount of zidovudine 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 protected from light.

(1) Shake a quantity of the powdered tablets containing 0.3 g of Zidovudine with 5 mL of *water* in a 100 mL volumetric flask, add 30 mL *methanol* and mix with the aid of ultrasound for 10 minutes; dilute to 100 mL with *water* and filter. Dilute 2 volumes of the filtrate to 5 volumes with *water*.
(2) Dilute 1 volume of solution (1) to 100 volumes with the mobile phase.
(3) Dilute 1 volume of solution (2) to 5 volumes with the mobile phase.
(4) 0.01% w/v of *zidovudine impurity standard BPCRS* in the mobile phase.
(5) 0.0036% w/v of *thymine* in the mobile phase.

CHROMATOGRAPHIC CONDITIONS

(a) Use a stainless steel column (25 cm × 4.6 mm) packed with *octadecylsilyl silica gel for chromatography* (5 µm) (Spherisorb ODS2 is suitable).
(b) Use isocratic elution and the mobile phase described below.
(c) Use a flow rate of 1.2 mL per minute.
(d) Use an ambient column temperature.
(e) Use a detection wavelength of 265 nm.
(f) Inject 20 µL of each solution.

MOBILE PHASE

20 volumes of *methanol* and 80 volumes of *water*.

SYSTEM SUITABILITY

The test is not valid unless, in the chromatogram obtained with solution (4):

the chromatogram closely resembles the reference chromatogram supplied with *zidovudine impurity standard*;

the *resolution* between the peaks due to zidovudine and impurity B is at least 1.5.

LIMITS

In the chromatogram obtained with solution (1):

the area of any peak corresponding to impurity C (thymine) is not greater than the area of the principal peak in the chromatogram obtained with solution (5) (3.0%);

the area of any peak corresponding to impurity B is not greater than the area of the principal peak in the chromatogram obtained with solution (2) (1.0%);

the area of any peak corresponding to impurity G (retention relative to zidovudine about 2.8) is not greater than 0.5 times the area of the principal peak in the chromatogram obtained with solution (2) (0.5%);

the area of any other *secondary peak* is not greater than the area of the principal peak in the chromatogram obtained with solution (3) (0.2%);

the sum of the areas of any other *secondary peaks* is not greater than 4 times the area of the principal peak in the chromatogram obtained solution (2) (4.0%).

Disregard any peak with an area less than half the area of the principal peak in the chromatogram obtained with solution (3) (0.1%).

ASSAY

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

(1) Shake a quantity of the powdered tablets containing 0.1 g of Zidovudine with 100 mL of mobile phase for 10 minutes and filter. Dilute 1 volume to 5 volumes with the mobile phase.
(2) 0.02% w/v of *zidovudine BPCRS* in the mobile phase.

(3) 0.01% w/v of *zidovudine impurity standard BPCRS* in the mobile phase.

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 zidovudine and impurity B is at least 1.5.

DETERMINATION OF CONTENT

Calculate the content of $C_{10}H_{13}N_5O_4$ in the tablets from the chromatograms obtained using the declared content of $C_{10}H_{13}N_5O_4$ in *zidovudine BPCRS*.

IMPURITIES

The impurities limited by the requirements of this monograph include impurities B, C and G listed under Zidovudine.