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

Telmisartan Tablets

General Notices

Action and use

Angiotensin II (AT_1) receptor antagonist.

DEFINITION

Telmisartan Tablets contain Telmisartan.

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

Content of telmisartan, $C_{33}H_{30}N_4O_2$

95.0 to 105.0% of the stated amount.

IDENTIFICATION

Shake a quantity of powdered tablets containing 80 mg of Telmisartan with 15 mL of *water*, filter and discard the filtrate. Extract the residue from the filter with 15 mL of *dichloromethane* in a flask and with the aid of ultrasound. Transfer this solution to a separating funnel, add 15 mL of *water* and shake. Separate the dichloromethane layer and evaporate to dryness under a stream of nitrogen. To the residue, add 10 mL of *acetonitrile* and filter. Evaporate the filtrate to dryness under a stream of nitrogen and dry the residue at 105° for 1 hour. The *infrared absorption spectrum* of the dried residue, Appendix II A, is concordant with the *reference spectrum* of telmisartan (*RS 486*).

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 a pH 7.5 phosphate buffer solution, prepared by dissolving 13.61 g of *potassium dihydrogen orthophosphate* in 800 mL of *water*, adjusted to pH 7.5 using *2M sodium hydroxide* and diluted to 1000 mL, at a temperature of 37°, as the medium.

PROCEDURE

(1) After 45 minutes withdraw a 10-mL sample of the medium and measure the *absorbance* of the filtered sample, diluted with the dissolution medium, if necessary, to produce a solution expected to contain 0.001% w/v of Telmisartan, at the maximum at 296 nm, Appendix II B using dissolution medium in the reference cell.

(2) To about 40 mg of *telmisartan BPCRS* add 1 mL of *0.1M sodium hydroxide* and sufficient *methanol* to produce a solution containing 0.04% w/v of Telmisartan. Dilute 1 volume of this solution to 40 volumes with the dissolution medium. Measure the *absorbance* of this solution using dissolution medium in the reference cell.

DETERMINATION OF CONTENT

Calculate the total content of telmisartan, $C_{33}H_{30}N_4O_2$, in the medium from the absorbances obtained and using the declared content of $C_{33}H_{30}N_4O_2$ in *telmisartan BPCRS*.

LIMITS

The amount of telmisartan 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.

(1) Dissolve a quantity of the powdered tablets containing 25 mg of Telmisartan in 5 mL of *methanol* and 100 µL of a 4% w/v solution of *sodium hydroxide* and mix with the aid of ultrasound. Add sufficient *methanol* to produce a solution containing 0.05% w/v of Telmisartan.
(2) Dilute 1 volume of solution (1) to 10 volumes with *methanol*. Dilute 1 volume of this solution to 100 volumes with *methanol*.
(3) Dissolve the contents of a vial of *telmisartan for system suitability EPCRS* in 2 mL of *methanol*.

CHROMATOGRAPHIC CONDITIONS

(a) Use a stainless steel column (12.5 cm × 4.0 mm) packed with *octadecylsilyl silica gel for chromatography* (5 µm) (Kromasil C18 is suitable).
(b) Use gradient elution and the mobile phase described below.
(c) Use a flow rate of 1 mL per minute.
(d) Use a column temperature of 40°.
(e) Use a detection wavelength of 230 nm.
(f) Inject 10 µL of each solution.

MOBILE PHASE

Mobile phase A Dissolve 2.0 g of *potassium dihydrogen orthophosphate* and 3.8 g of *sodium pentanesulfonate monohydrate* in 950 mL *water*, adjust to pH 3.0 with *dilute orthophosphoric acid* and dilute to 1000 mL with *water*.

Mobile phase B 20 volumes of *methanol* and 80 volumes of *acetonitrile*.

Time (Minutes)	Mobile phase A (% v/v)	Mobile phase B (% v/v)	Comment
0-3	70	30	isocratic
3-28	70→20	30→80	linear gradient
28-30	20→70	80→30	linear gradient
30-35	70	30	re-equilibration

When the chromatograms are recorded under the prescribed conditions, the relative retentions with reference to telmisartan (retention time about 15 minutes) are: impurity A, about 0.2; impurity E, about 0.6; impurity F, about 0.7; impurity B, about 0.9; impurity C, about 1.5.

SYSTEM SUITABILITY

The test is not valid unless the chromatogram obtained with solution (3) is similar to the chromatogram supplied with *telmisartan for system suitability EPCRS* and the *resolution* between the peaks due to impurity B and telmisartan is at least 3.0.

LIMITS

Use the chromatogram supplied with *telmisartan for system suitability EPCRS* and the chromatogram obtained with solution (3) to identify the peaks due to impurities A, B, C, E and F. In the chromatogram obtained with solution (1):

the area of any peak corresponding to impurity C is not greater than twice the area of the principal peak in the chromatogram obtained with solution (2) (0.2%);

the area of any peak corresponding to impurity A or B is not greater than 1.5 times the area of the principal peak in the chromatogram obtained with solution (2) (0.15% of each);

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

the sum of the areas of all the *secondary peaks* is not greater than 10 times the area of the principal peak in the chromatogram obtained with solution (2) (1.0%).

Disregard any peak with an area less than 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, using the following solutions.

(1) Dissolve a quantity of the powdered tablets containing 25 mg of Telmisartan in 5 mL of *methanol* and 100 µL of a 4% w/v solution of *sodium hydroxide*. Mix with the aid of ultrasound, dilute to 50 mL with *methanol* and filter. To the filtrate, add sufficient *methanol* to produce a solution containing 0.0005% w/v of Telmisartan.
(2) 0.0005% w/v of *telmisartan BPCRS* in *methanol*.
(3) Dissolve the contents of a vial of *telmisartan for system suitability EPCRS* in 2 mL of *methanol*.

CHROMATOGRAPHIC CONDITIONS

The chromatographic conditions described under Related substances may be used.

SYSTEM SUITABILITY

The test is not valid unless the chromatogram obtained with solution (3) is similar to the chromatogram supplied with *telmisartan for system suitability EPCRS* and the *resolution* between the peaks due to impurity B and telmisartan is at least 3.0.

DETERMINATION OF CONTENT

Calculate the content of $C_{33}H_{30}N_4O_2$ in the tablets using the declared content of $C_{33}H_{30}N_4O_2$ in *telmisartan BPCRS*.

IMPURITIES

The impurities limited by the requirements of this monograph include impurities A, B, C, E and F listed under Telmisartan.