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

Clindamycin Vaginal Cream

General Notices

Action and use

Lincosamide antibacterial.

DEFINITION

Clindamycin Vaginal Cream contains Clindamycin Phosphate in a suitable basis.

The vaginal cream complies with the requirements stated under Vaginal Preparations and with the following requirements.

Content of clindamycin, $C_{18}H_{33}ClN_2O_5S$

90.0 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 a mixture of 45 volumes of *acetonitrile* and 155 volumes of 0.1M *potassium dihydrogen phosphate* previously adjusted to pH 2.5 with *orthophosphoric acid*.
(1) Disperse a quantity of the cream containing the equivalent of 5 mg of clindamycin in 1 mL and shake. Dilute to 5 mL and mix with a vortex mixer. Filter (a 0.45-µm nylon filter is suitable).
(2) 0.12% w/v of *clindamycin phosphate BPCRS*.

CHROMATOGRAPHIC CONDITIONS

(a) Use as the coating *silica gel* (Merck silica gel 60 plates are suitable).
(b) Use the mobile phase as described below.
(c) Apply 10 µL of each solution.
(d) Develop the plate to 15 cm.
(e) After removal of the plate, dry at 100° for 30 minutes, allow it to cool, spray with a 0.1% w/v solution of *potassium permanganate* and examine in daylight.

MOBILE PHASE

20 volumes of *water*, 20 volumes of *glacial acetic acid* and 60 volumes of *butan-1-ol*.

CONFIRMATION

The principal spot in the chromatogram obtained with solution (1) corresponds to that in the chromatogram obtained with solution (2).

B. In the Assay, the retention time of the principal peak in the chromatogram obtained with solution (1) shows a peak with the same retention time as the principal peak in the chromatogram obtained with solution (2).

TESTS

Related substances

Carry out the method for *liquid chromatography*, Appendix III D, using the following solutions in a mixture of 15 volumes of *acetonitrile R1* and 85 volumes of *water* previously adjusted to pH 2.0 with *orthophosphoric acid*. *Prepare the solutions immediately before use and protect from light.*

(1) Disperse a quantity of the cream containing the equivalent of 25 mg of clindamycin in 10 mL and filter (a 0.45-µm nylon filter is suitable). Wash 5 mL of the filtrate and with three 5-mL quantities of *diethyl ether*, taking the aqueous layer.
(2) Dilute 1 volume of solution (1) to 100 volumes.
(3) 0.3% w/v of *clindamycin phosphate for system suitability EPCRS*.
(4) Dilute 1 volume of solution (2) to 10 volumes.

CHROMATOGRAPHIC CONDITIONS

(a) Use a stainless steel column (15 cm × 4.6 mm) packed with *octadecylsilyl silica gel for chromatography* (5 µm) (Symmetry C18 is suitable).
(b) Use gradient elution and the mobile phase described below.
(c) Use a flow rate of 1.1 mL per minute.
(d) Use a column temperature of 30°.
(e) Use an autosampler at 4°.
(f) Use a detection wavelength of 210 nm.
(g) Inject 20 µL of each solution.

MOBILE PHASE

Mobile phase A 21 volumes of *acetonitrile R1* and 79 volumes of a 0.136% w/v solution of *potassium dihydrogen orthophosphate* previously adjusted to pH 6.0 with a 45% w/v solution of *potassium hydroxide*.

Mobile phase B 40 volumes of a 0.136% w/v solution of *potassium dihydrogen orthophosphate* previously adjusted to pH 6.0 with a 45% w/v solution of *potassium hydroxide* and 60 volumes of *acetonitrile R1*.

Time (Minutes)	Mobile phase A (% v/v)	Mobile phase B (% v/v)	Comment
0-13	100	0	isocratic
13-18	100→50	0→50	linear gradient
18-39	50	50	isocratic
39-45	50→100	50→0	linear gradient
45-50	100	0	re-equilibration

When the chromatograms are recorded under the prescribed conditions, the relative retentions with reference to clindamycin phosphate (retention time about 12 minutes) are: impurity F, about 0.15; impurity G, about 0.2; impurity I, about 0.35; impurity B, about 0.45; impurity L, about 0.65; impurity J, about 1.2; impurity E, about 1.75 and impurity K, about 1.9.

SYSTEM SUITABILITY

The test is not valid unless, in the chromatogram obtained with solution (3), the *resolution* between the peaks due to impurities F and G is at least 2.0.

LIMITS

In the chromatogram obtained with solution (1):

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

the area of any peaks due to impurities B, F or L are not greater than the area of the principal peak in the chromatogram obtained with solution (2) (1% 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 (4) (0.2%);

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

Disregard all peaks with an area less than the principal peak in the chromatogram obtained with solution (4) (0.1%).

ASSAY

Carry out the method for *liquid chromatography*, Appendix III D, using the following solutions in a mixture of 15 volumes of *acetonitrile R1* and 85 volumes of *water* previously adjusted to pH 2.0 with *orthophosphoric acid*.

(1) Disperse a quantity of the cream containing the equivalent of 25 mg of clindamycin in 25 mL with the aid of ultrasound and shake for 30 minutes. Dilute to 100 mL and filter (a 0.45-µm nylon filter is suitable).
(2) 0.03% w/v of *clindamycin phosphate BPCRS*.

CHROMATOGRAPHIC CONDITIONS

The chromatographic conditions described under Related substances may be used with an isocratic elution and mobile phase A.

SYSTEM SUITABILITY

The Assay is not valid unless, in the chromatogram obtained with solution (2), the *symmetry factor* of the peak due to clindamycin phosphate is between 0.8 and 3.0.

DETERMINATION OF CONTENT

Calculate the content of $C_{18}H_{33}ClN_2O_5S$, in the cream from the chromatograms obtained and using the declared content of $C_{18}H_{33}ClN_2O_5S$, in *clindamycin phosphate BPCRS*. Each mg of $C_{18}H_{34}ClN_2O_8PS$ is equivalent to 0.8416 mg of $C_{18}H_{33}ClN_2O_5S$.

STORAGE

Clindamycin Vaginal Cream should be stored at a temperature not exceeding 25°. It should not be allowed to freeze.

LABELLING

The quantity of the active ingredient is stated in terms of the equivalent amount of clindamycin in a suitable weight-weight basis.

IMPURITIES

The impurities limited by the requirements of this monograph include those listed under *Clindamycin Phosphate*.