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

Oxytetracycline Cutaneous Spray

General Notices

Action and use

Tetracycline antibacterial.

DEFINITION

Oxytetracycline Cutaneous Spray contains Oxytetracycline Hydrochloride in a suitable vehicle.

The cutaneous spray complies with the requirements stated under Veterinary Liquid Preparations for Cutaneous Application and with the following requirements.

Content of oxytetracycline hydrochloride, $C_{22}H_{24}N_2O_9$,HCl

90.0 to 110.0% 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 to 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

Related substances

Carry out the method for *liquid chromatography*, Appendix III D, using the following solutions in a mixture of 20 volumes of *acetonitrile* and 80 volumes of 0.01M oxalic acid (solvent A). Prepare the solutions immediately before use.

(1) Shake a quantity of the cutaneous spray containing 0.16 g of Oxytetracycline Hydrochloride in 150 mL of solvent A and dilute to 200 mL. Filter the resulting solution (Whatman GF/C filter is suitable).
(2) Dilute 1 volume of solution (1) to 100 volumes.
(3) 0.08% w/v of *oxytetracycline for system suitability A EPCRS*.
(4) 0.0008% w/v of *sulfan blue*.
(5) Dilute 1 volume of solution (2) to 10 volumes.

CHROMATOGRAPHIC CONDITIONS

(a) Use a stainless steel column (15 cm × 4.6 mm) packed with *end-capped octylsilyl silica gel for chromatography* (5 µm) (Inertsil C8 is suitable).

(b) Use gradient elution and the mobile phase described below.
(c) Use a flow rate of 1.3 mL per minute.
(d) Use a column temperature of 50°.
(e) Use a detection wavelength of 254 nm.
(f) Inject 10 µL of each solution.

MOBILE PHASE

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

Mobile phase B 5 volumes of *tetrahydrofuran*, 15 volumes of *methanol* and 80 volumes of *acetonitrile*.

Time (Minutes)	Mobile phase A (% v/v)	Mobile phase B (% v/v)	Comment
0-5	90	10	isocratic
5-20	90→65	10→35	linear gradient
20-30	65	35	isocratic
30-31	65→90	35→10	linear gradient
31-37	90	10	re-equilibration

When the chromatograms are recorded under the prescribed conditions, the relative retentions with reference to oxytetracycline (retention time about 7 minutes) are: impurity A, about 0.9; impurity B, about 1.2; impurity C, about 1.3; impurity D, about 1.4; impurity E, about 2.2; impurity F, about 2.3.

SYSTEM SUITABILITY

The test is not valid unless, in the chromatogram obtained with solution (3), the *peak-to-valley ratio* is at least 3.0, where *Hp* is the height above the baseline of the peak due to impurity A and *Hv* is the height above the baseline of the lowest point of the curve separating this peak from the peak due to oxytetracycline.

The test is not valid unless, in the chromatogram obtained with solution (3), the *peak-to-valley ratio* is at least 3.0, where *Hp* is the height above the baseline of the peak due to impurity B and *Hv* is the height above the baseline of the lowest point of the curve separating this peak from the peak due to oxytetracycline.

LIMITS

Identify any peak corresponding to impurities A, B, C, D, E and F in the chromatogram obtained with solution (1), using the chromatogram obtained with solution (3). Identify the peak due to patent blue V if present in the chromatogram obtained with solution (1), using the chromatogram obtained with solution (4). Multiply the areas of the peaks due to Impurity D and E by a correction factor of 0.4.

In the chromatogram obtained with solution (1):

the area of any peak corresponding to impurity A 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 B is not greater than 2.5 times the area of the principal peak in the chromatogram obtained with solution (2) (2.5%);

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) (2.0%);

the area of any other *secondary peak* is not greater than the area of the principal peak in the chromatogram obtained with solution (2) (1.0%);

the sum of the areas of all the *secondary peaks* is not greater than 7 times the area of the principal peak in the chromatogram obtained with solution (2) (7.0%).

Disregard any peak due to patent blue V and any peak with an area less than the area of 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 20 volumes of *acetonitrile* and 80 volumes of 0.01M *oxalic acid* (solvent A). Prepare the solutions immediately before use.

(1) Dilute a quantity of the cutaneous spray containing 0.16 g of Oxytetracycline Hydrochloride with 150 mL of solvent A and shake. Dilute to 200 mL and filter (Whatman GF/C filter is suitable). Dilute 1 volume of the filtrate to 10 volumes.
(2) 0.0074% w/v of *oxytetracycline BPCRS*.

CHROMATOGRAPHIC CONDITIONS

The chromatographic conditions stated under Related substances may be used.

DETERMINATION OF CONTENT

Calculate the content of $C_{22}H_{24}N_2O_9$,HCl in the spray using the declared content of $C_{22}H_{24}N_2O_9$ in *oxytetracycline BPCRS*. Each mg of $C_{22}H_{24}N_2O_9$ is equivalent to 1.079 mg of $C_{22}H_{24}N_2O_9$,HCl.

IMPURITIES

The impurities limited by the requirements of this monograph include those listed under *Oxytetracycline hydrochloride*.