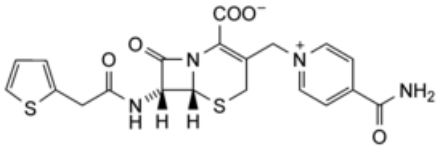
Edition: BP 2025 (Ph. Eur. 11.6 update)

Cefalonium

General Notices



$C_{20}H_{18}N_4O_5S_2,2H_2O$ 494.5 *5575-21-3 (anhydrous)*

Action and use

Cephalosporin antibacterial.

Preparation

Cefalonium Intramammary Infusion (Dry Cow)

DEFINITION

Cefalonium is 3-(4-carbamoyl-1-pyridiniomethyl)-7-[(2-thienyl)acetamido]-3-cephem-4-carboxylate dihydrate. It contains not less than 95.0% and not more than 103.5% of $C_{20}H_{18}N_4O_5S_2$, calculated with reference to the anhydrous substance.

CHARACTERISTICS

A white or almost white crystalline powder.

Very slightly soluble in *water* and in *methanol*; soluble in *dimethyl sulfoxide*; insoluble in *dichloromethane*, in *ethanol (96%)* and in *ether*. It dissolves in dilute acids and in alkaline solutions.

IDENTIFICATION

A. The *infrared absorption spectrum*, Appendix II A, is concordant with the *reference spectrum* of cefalonium *(RSV 09)*.

B. The *light absorption*, Appendix II B, in the range 220 to 350 nm of a 0.002% w/v solution in *water* exhibits two maxima, at 235 nm and at 262 nm. The *absorbance* at 235 nm is about 0.76 and at 262 nm is about 0.62.

TESTS

Specific optical rotation

Dissolve 0.25 g with the aid of gentle heat in sufficient *dimethyl sulfoxide* to produce 50 mL. Allow the solution to stand for 30 minutes before measurement of the optical rotation. The *specific optical rotation* of the resulting solution is -50 to -56,

calculated with reference to the anhydrous substance, Appendix V F.

Related substances

Carry out the method for *thin-layer chromatography*, Appendix III A, using the following solutions in 8.3M *acetic acid*.

(1) 2.5% w/v of the substance being examined.
(2) 0.05% w/v of the substance being examined.
(3) 0.025% w/v of the substance being examined.
(4) 0.005% w/v of the substance being examined.
(5) 0.05% w/v of each of *cefalotin sodium BPCRS* and *isonicotinamide*.

CHROMATOGRAPHIC CONDITIONS

(a) Use as the coating *silica gel F_{254}*.
(b) Use the mobile phase as described below.
(c) Apply 4 µL of each solution.
(d) Develop the plate to 12 cm.
(e) After removal of the plate, allow it to dry in air and examine under *ultraviolet light (254 nm)*.

MOBILE PHASE

10 volumes of *glacial acetic acid*, 10 volumes of 1M *sodium acetate* and 30 volumes of *propan-2-ol*.

SYSTEM SUITABILITY

The test is not valid unless the chromatogram obtained with solution (5) shows two clearly separated spots.

LIMITS

Any *secondary spot* in the chromatogram obtained with solution (1) is not more intense than the spot in the chromatogram obtained with solution (2) (2%), not more than one such spot is more intense than the spot in the chromatogram obtained with solution (3) (1%) and not more than three such spots are more intense than the spot in the chromatogram obtained with solution (4) (0.2% each).

Sulfated ash

Not more than 0.2%, Appendix IX A.

Water

6.5 to 8.5% w/w, Appendix IX C. Use 0.5 g.

ASSAY

Measure the *absorbance* of a 0.002% w/v solution at the maximum at 262 nm, Appendix II B. Calculate the content of $C_{20}H_{18}N_4O_5S_2$ from the *absorbance* obtained using a 0.002% w/v solution of *cefalonium BPCRS* and from the declared content of $C_{20}H_{18}N_4O_5S_2$ in *cefalonium BPCRS*.

STORAGE

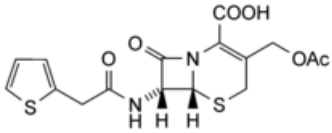
Cefalonium should be protected from light and stored at a temperature not exceeding 30°.

Cefalonium intended for use in the manufacture of either a parenteral dosage form or an intramammary infusion without a further appropriate sterilisation procedure complies with the following additional requirement.

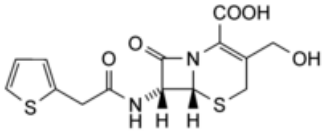
Sterility

Complies with the *test for sterility*, Appendix XVI A.

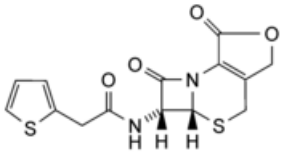
IMPURITIES



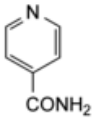
A. cefalotin,



B. 3-hydroxymethyl-7β-(2-thienylacetamido)-3-cephem-4-carboxylic acid,



C. 3-hydroxymethyl-7β-(2-thienylacetamido)-3-cephem-4-carboxylic acid lactone,



D. isonicotinamide.