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

Pentamidine Injection

General Notices

Action and use

Antiprotozoal.

DEFINITION

Pentamidine Injection is a sterile solution of Pentamidine Isetionate in Water for Injections. It is prepared by dissolving Pentamidine Isetionate for Injection in the requisite amount of Water for Injections immediately before use.

The injection complies with the requirements stated under Parenteral Preparations.

STORAGE

Pentamidine Injection deteriorates on storage and should be used immediately after preparation.

PENTAMIDINE ISETIONATE FOR INJECTION

DEFINITION

Pentamidine Isetionate for Injection is a sterile material consisting of Pentamidine Isetionate without excipients. It is supplied in a sealed container.

The contents of the sealed container comply with the requirements for Powders for Injections or Infusions stated under Parenteral Preparations and with the following requirements.

Content of pentamidine isetionate, $C_{19}H_{24}N_4O_2,2C_2H_6O_4S$

95.0 to 105.0% of the stated amount.

IDENTIFICATION

A. The *infrared absorption spectrum*, Appendix II A, is concordant with the *reference spectrum* of pentamidine isetionate (*RS 259*).
B. The *light absorption*, Appendix II B, in the range 230 to 350 nm of a 0.002% w/v solution in 0.01M *hydrochloric acid* exhibits a maximum only at 262 nm. The *absorbance* at 262 nm is about 0.95.
C. To 10 mL of a 0.05% w/v solution add 1 mL of a 0.1% w/v solution of *glyoxal sodium bisulfite* and 1 mL of a solution prepared by dissolving 4 g of *boric acid* in a mixture of 27 mL of 1M *sodium hydroxide* and sufficient *water* to produce 100 mL. Heat on a water bath for 10 minutes. A magenta colour is produced.

TESTS

Acidity

pH of a 5% w/v solution, 4.5 to 6.5, Appendix V L.

Related substances

Carry out the method for *liquid chromatography*, Appendix III D, using the following solutions.

(1) 0.1% w/v of the contents of the sealed container in the mobile phase.
(2) Dilute 1 volume of solution (1) to 100 volumes with the mobile phase.
(3) Add to 0.1 g of the contents of the sealed container 40 mL of *water* and some glass beads, adjust the pH to 10.5 with 2M *sodium hydroxide*, heat under a reflux condenser for 20 minutes, cool and dilute to 50 mL with *water*. Dilute 1 volume of this solution to 50 volumes with 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 ODS 1 is suitable).
(b) Use isocratic elution and the mobile phase described below.
(c) Use a flow rate of 1 mL per minute.
(d) Use an ambient column temperature.
(e) Use a detection wavelength of 265 nm.
(f) Inject 20 µL of each solution.
(g) For solution (1) allow the chromatography to proceed for 3.5 times the retention time of the principal peak.

MOBILE PHASE

7 volumes of a 3% w/v solution of *ammonium acetate* and 13 volumes of *methanol*, the pH of the mixture being adjusted to 7.5 with *triethylamine*.

SYSTEM SUITABILITY

The test is not valid unless the chromatogram obtained with solution (3) shows two principal peaks and the *resolution factor* between these peaks is greater than 2.0.

LIMITS

In the chromatogram obtained with solution (1):

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

the sum of the areas of all such peaks is not greater than 0.4 times of the area of the peak in the chromatogram obtained with solution (2) (0.4%).

ASSAY

Determine the weight of the contents of 10 containers as described in the test for *uniformity of weight*, Appendix XII C1, Powders for Parenteral Use.

Dissolve 0.25 g of the mixed contents of the 10 containers in 50 mL of *dimethylformamide* and carry out Method II for *non-aqueous titration*, Appendix VIII A, using 0.1M *tetrabutylammonium hydroxide VS* as titrant and determining the end point potentiometrically. Each mL of 0.1M *tetrabutylammonium hydroxide VS* is equivalent to 29.63 mg of $C_{19}H_{24}N_4O_2,2C_2H_6O_4S$.

Calculate the content of pentamidine isetionate, $C_{19}H_{24}N_4O_2,2C_2H_6O_4S$, in a container of average content weight.