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

Desferrioxamine Injection

General Notices

Action and use

Chelating agent (iron).

DEFINITION

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

The injection complies with the requirements stated under Parenteral Preparations.

STORAGE

Desferrioxamine Injection deteriorates on storage and should be used immediately after preparation. Cloudy solutions should be discarded.

DESFERRIOXAMINE MESILATE FOR INJECTION

DEFINITION

Desferrioxamine Mesilate for Injection is a sterile material consisting of Desferrioxamine Mesilate with or without excipients. It is supplied in a sealed container.

PRODUCTION

Risk assessment should be used to evaluate the potential for genotoxic methanesulfonate esters to be formed in the presence of low molecular weight alcohols. If a risk of methanesulfonate ester formation is identified through risk assessment, these impurities should not exceed the threshold of toxicological concern.

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 desferrioxamine mesilate, $C_{25}H_{48}N_6O_8,CH_4SO_3$

94.0 to 110.0% of the stated amount.

IDENTIFICATION

A. Dissolve 40 mg of the contents of the sealed container in 2 mL of *absolute ethanol* by heating on a water bath at 60°, cool in ice until the substance begins to crystallise and evaporate to dryness at room temperature under a gentle current of *nitrogen*. The *infrared absorption spectrum* of the residue, Appendix II A, is concordant with the *reference spectrum* of desferrioxamine mesilate *(RS 086)*.

B. In the test for Related substances the chromatogram obtained with solution (1) shows a peak with the same retention time as the principal peak in the chromatogram obtained with solution (3).

TESTS

Related substances

Carry out the method for *liquid chromatography*, Appendix III D, using the following solutions. Prepare the solutions immediately before use and protect from light.

(1) Dissolve a quantity of the contents of the sealed containers containing 75 mg of Desferrioxamine Mesilate in sufficient of the mobile phase to produce 50 mL.
(2) Dilute 1 volume of solution (1) to 25 volumes with the mobile phase.
(3) 0.15% w/v of *desferrioxamine mesilate BPCRS* in the mobile phase.
(4) Dilute 1 volume of solution (2) to 50 volumes with the mobile phase.

CHROMATOGRAPHIC CONDITIONS

(a) Use a stainless steel column (25 cm × 4.6 mm) packed with *end-capped octadecylsilyl silica gel for chromatography* (10 µm) (Nucleosil C18 is suitable).
(b) Use isocratic elution and the mobile phase described below.
(c) Use a flow rate of 2 mL per minute.
(d) Use an ambient column temperature.
(e) Use a detection wavelength of 220 nm.
(f) Inject 20 µL of each solution.
(g) For solutions (1) and (2) allow the chromatography to proceed for three times the retention time of the principal peak.

MOBILE PHASE

55 volumes of *tetrahydrofuran* and 950 volumes of a solution containing 0.039% w/v of *disodium edetate* and 0.139% w/v of *ammonium phosphate* adjusted to pH 2.8 with *orthophosphoric acid* in *water*.

SYSTEM SUITABILITY

The test is not valid unless, in the chromatogram obtained with solution (3), the *resolution* between the peak with relative retention time of about 0.8 and the principal peak is at least 1.0.

LIMITS

In the chromatogram obtained with solution (1):

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

the sum of the areas of any such peaks is not greater than 1.75 times the area of the principal peak in the chromatogram obtained with solution (2) (7%).

Disregard any peak with an area less than the area of the principal peak in the chromatogram obtained with solution (4) (0.08%).

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 a quantity of the mixed contents of the 10 containers containing 0.3 g of Desferrioxamine Mesilate in 15 mL of *water* and add 2 mL of 0.05M *sulfuric acid*. Titrate slowly with 0.1M *ammonium iron(III) sulfate VS* determining the end point

potentiometrically and using a platinum electrode and a calomel reference electrode. Each mL of 0.1M *ammonium iron(III) sulfate VS* is equivalent to 65.68 mg of $C_{25}H_{48}N_6O_8,CH_4SO_3$. Calculate the content of $C_{25}H_{48}N_6O_8,CH_4SO_3$ in a container of average content weight.