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

Pancuronium Injection

General Notices

Action and use

Non-depolarizing neuromuscular blocker.

DEFINITION

Pancuronium Injection is a sterile solution of Pancuronium Bromide in Sodium Chloride Intravenous Infusion.

The injection complies with the requirements stated under Parenteral Preparations and with the following requirements.

Content of pancuronium bromide, $C_{35}H_{60}Br_2N_2O_4$

95.0 to 105.0% of the stated amount.

CHARACTERISTICS

A colourless liquid.

IDENTIFICATION

A. In the test for Related substances, the principal spot in the chromatogram obtained with solution (1) is similar in position, colour and size to the principal spot in the chromatogram obtained with solution (2).
B. To a volume containing 5 mg of Pancuronium Bromide, diluted if necessary to 10 mL with *water*, add 10 mL of *1,2-dichloroethane* followed by 1 mL of *methyl orange solution*. Shake, centrifuge, allow the layers to separate and acidify the organic layer with 1M *sulfuric acid*. A red colour is produced.
C. Yields reaction A characteristic of *bromides*, Appendix VI.

TESTS

Acidity

pH, 3.8 to 4.2, Appendix V L.

Related substances

Carry out the method for *thin-layer chromatography*, Appendix III A, using the following solutions.

(1) Evaporate a volume of the injection containing 20 mg of Pancuronium Bromide to dryness in a current of *nitrogen*, add 2 mL of *acetonitrile* to the residue and mix with the aid of ultrasound for 1 minute.
(2) 1.0% w/v of *pancuronium bromide BPCRS* in *acetonitrile*.
(3) Dilute 1 volume of solution (1) to 50 volumes with *acetonitrile*.

(4) Dilute 1 volume of solution (3) to 2 volumes with *acetonitrile*.
(5) 3% w/v of *pancuronium bromide for system suitability EPCRS* (containing 1.0 per cent of impurity D) in *methylene chloride*.

CHROMATOGRAPHIC CONDITIONS

(a) Use as the coating *silica gel*.
(b) Use the mobile phase as described below.
(c) Apply 5 µL of each solution.
(d) Develop the plate to 15 cm in an unsaturated tank.
(e) After removal of the plate, dry it in a current of cold air and spray with a 1% w/v solution of *sodium nitrite* in *methanol*. Allow to stand for 2 minutes, spray the plate with *potassium iodobismuthate solution* and dry in a current of cold air.

MOBILE PHASE

5 volumes of a 20% w/v solution of *sodium iodide*, 10 volumes of *acetonitrile* and 85 volumes of *propan-2-ol*.

SYSTEM SUITABILITY

The test is not valid unless the chromatogram obtained with solution (5) shows two distinct spots and the Rf value of the spot due to impurity D relative to that due to pancuronium bromide is at least 1.2.

LIMITS

In the chromatogram obtained with solution (1):

any spot corresponding to dacuronium bromide (impurity A) or vecuronium bromide (impurity D) is not more intense than the spot in the chromatogram obtained with solution (5) (3%). Impurity A and impurity D have the same Rf value and if present in the same solution would produce a single spot;

any other *secondary spot* is not more intense than the spot in the chromatogram obtained with solution (3) (2%);

not more than one such spot is more intense than the spot in the chromatogram obtained with solution (4) (1%).

ASSAY

To a volume containing 4 mg of Pancuronium Bromide add 1 mL of a 13.9% w/v solution of *hydroxylamine hydrochloride* followed by 1 mL of a 15% w/v solution of *sodium hydroxide*. Allow to stand for 10 minutes and then add 1 mL of a solution prepared by diluting *hydrochloric acid* with *water* to contain 12.76% w/v of HCl. Add 1 mL of a 10% w/v solution of *iron(III) chloride* in 0.1M *hydrochloric acid*, add sufficient *water* to produce 25 mL, centrifuge and measure the *absorbance* of the clear, supernatant liquid at the maximum at 510 nm, Appendix II B, using in the reference cell a solution prepared by carrying out the operation using an equal volume of *water* in place of the injection. Calculate the content of $C_{35}H_{60}Br_2N_2O_4$ from the *absorbance* obtained by repeating the operation using a suitable quantity of *pancuronium bromide BPCRS* dissolved in *water* and using the declared content of $C_{35}H_{60}Br_2N_2O_4$ in *pancuronium bromide BPCRS*.

STORAGE

Pancuronium Injection should be stored at a temperature of 2° to 8°.