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

Vincristine Injection

General Notices

Action and use

Vinca alkaloid cytotoxic.

DEFINITION

Vincristine Injection is a sterile solution of Vincristine Sulfate in a suitable vehicle.

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

Content of vincristine sulfate, $C_{46}H_{56}N_4O_{10},H_2SO_4$

90.0 to 107.5% of the stated amount of anhydrous vincristine sulfate.

IDENTIFICATION

A. In the test for Related substances, the principal peak in the chromatogram obtained with solution (1) has the same retention time as the principal peak in the chromatogram obtained with solution (4).
B. Shake a volume of the injection containing the equivalent of 1 mg of anhydrous vincristine sulfate with 3 mL of *chloroform*, filter and wash the filter with 2 mL of *chloroform*. Evaporate the combined chloroform solutions to dryness at 40°. Add 0.2 mL of a freshly prepared 1% w/v solution of *vanillin* in *hydrochloric acid* to the residue. An orange colour is produced in about 1 minute (distinction from vinblastine sulfate).

TESTS

Related substances

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

(1) Dilute a volume of the injection, if necessary, with sufficient *water* to produce a solution containing the equivalent of 0.10% w/v of anhydrous vincristine sulfate.
(2) Dilute 1 volume of solution (1) to 50 volumes.
(3) 0.10% w/v each of *vincristine sulfate EPCRS* and *vinblastine sulfate EPCRS*.
(4) 0.10% w/v of *vincristine sulfate EPCRS*.
(5) Dilute 1 volume of solution (2) to 20 volumes.

CHROMATOGRAPHIC CONDITIONS

(a) Use a stainless steel column (25 cm × 4.6 mm) packed with *end-capped octylsilyl silica gel for chromatography* (5 µm) (Zorbax C8 is suitable) and a guard column packed with a suitable silica gel.
(b) Use isocratic elution and the mobile phase described below.
(c) Use a flow rate of 1.0 mL per minute.
(d) Use an ambient column temperature.
(e) Use a detection wavelength of 297 nm.

(f) Inject 10 µL of each solution.

(g) Allow the chromatography to proceed for 3 times the retention time of vincristine.

MOBILE PHASE

30 volumes of a 1.5% v/v solution of *diethylamine* adjusted to pH 7.5 with *orthophosphoric acid* and 70 volumes of *methanol*.

SYSTEM SUITABILITY

The test is not valid unless, in the chromatogram obtained with solution (3), the *resolution* between the peaks due to vincristine and vinblastine is at least 4.0.

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) (2%);

the sum of the areas of any *secondary peaks* is not greater than 2.5 times the area of the principal peak in the chromatogram obtained with solution (2) (5%).

Disregard any peak with an area less than the area of the principal peak in the chromatogram obtained with solution (5) (0.1%).

ASSAY

Dissolve a volume of the injection, if necessary, in a suitable volume of *methanol* to produce a solution containing the equivalent of 0.005% w/v of anhydrous vincristine sulfate. Measure the *absorbance* of the resulting solution at the maximum at 297 nm, Appendix II B. Calculate the content of $C_{46}H_{56}N_4O_{10},H_2SO_4$ in the sealed container taking 177 as the value of A(1%, 1 cm) at the maximum at 297 nm. Repeat the procedure with a further nine containers. Calculate the average content of $C_{46}H_{56}N_4O_{10},H_2SO_4$ per container from the 10 individual results thus obtained.

STORAGE

Vincristine Injection should be stored strictly in accordance with the manufacturer’s instructions.

LABELLING

The label states:

the preparation is for intravenous use only, it may be fatal if given by other routes;

the quantity of active ingredient in terms of the equivalent amount of anhydrous vincristine sulfate.