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

Desmopressin Intranasal Solution

General Notices

Action and use

Vasopressin analogue; treatment of diabetes insipidus.

DEFINITION

Desmopressin Intranasal Solution is a solution of Desmopressin containing suitable buffering agents and preservatives.

The intranasal solution complies with the requirements stated under Nasal Preparations and with the following requirements.

Content of desmopressin, $C_{46}H_{64}N_{14}O_{12}S_2$

90.0 to 110.0% of the stated amount of the peptide.

CHARACTERISTICS

A colourless solution.

IDENTIFICATION

In the Assay, the principal peak in the chromatogram obtained with solution (1) corresponds to that in the chromatogram obtained with solution (2).

TESTS

Acidity

pH, 3.5 to 5.5, Appendix V L.

Related substances

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

(1) Dilute a volume of the intranasal solution in *water* to produce a solution containing 0.0025% w/v of the peptide.
(2) Dissolve the contents of a vial of *desmopressin impurity standard BPCRS* in 2 mL of *water*.

CHROMATOGRAPHIC CONDITIONS

(a) Use a stainless steel column (12 cm × 4.0 mm) packed with *octadecylsilyl silica gel for chromatography* (5 µm) (Nucleosil C18 is suitable).
(b) Use gradient elution and the mobile phase described below.
(c) Use a flow rate of 1.5 mL per minute.
(d) Use an ambient column temperature.
(e) Use a detection wavelength of 220 nm.
(f) Inject 200 µL of each solution.

MOBILE PHASE

Mobile phase A *0.067M mixed phosphate buffer solution, pH 7.0*.

Mobile phase B 10 volumes of *acetonitrile for chromatography* and 10 volumes of mobile phase A.

Time (Minutes)	Mobile phase A%	Mobile phase B%	Comment
0-4	76	24	isocratic
4-18	76→58	24→42	linear gradient
18-35	58→48	42→52	linear gradient
35-40	48→76	52→24	linear gradient
40-50	76	24	re-equilibration

Using the prescribed conditions the retention time of [4- L -glutamic acid]desmopressin is about 14 minutes and the retention time of desmopressin is about 15 minutes.

SYSTEM SUITABILITY

The test is not valid unless, in the chromatogram obtained with solution (2), the *resolution* between the two principal peaks is at least 3.4;

the peak due to desmopressin is clearly separated from the peak due to the antimicrobial preservative stated on the label.

LIMITS

In the chromatogram obtained with solution (1):

the area of any *secondary peak* is not more than 4.0%.

the total area of any such peaks is not more than 5.0%.

Disregard any peak due to the solvent, any antimicrobial preservative stated on the label and any peak with an area less than 0.3%.

ASSAY

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

(1) Dilute a volume of the intranasal solution in *water* to produce a solution containing 0.0025% w/v of the peptide.
(2) 0.0025% w/v of *desmopressin BPCRS* in *water*.
(3) Dissolve the contents of a vial of *desmopressin impurity standard BPCRS* in 2 mL of *water*.

CHROMATOGRAPHIC CONDITIONS

(a) Use a stainless steel column (12 cm × 4.0 mm) packed with *octadecylsilyl silica gel for chromatography* (5 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 200 µL of each solution.

MOBILE PHASE

A mixture of 2 volumes of *acetonitrile for chromatography* and 8 volumes of *0.067M mixed phosphate buffer solution, pH 7.0*.

SYSTEM SUITABILITY

The test is not valid unless:

in the chromatogram obtained with solution (3), the *resolution* between the two principal peaks is at least 2.8;

the peak due to desmopressin is clearly separated from the peak due to the antimicrobial preservative stated on the label.

The retention time of desmopressin is about 5 minutes. If necessary adjust the concentration of *acetonitrile* in the mobile phase to obtain the correct retention time and *resolution*.

DETERMINATION OF CONTENT

Calculate the content of $C_{46}H_{64}N_{14}O_{12}S_2$ in the intranasal solution from the chromatograms obtained and from the declared content of $C_{46}H_{64}N_{14}O_{12}S_2$ in *desmopressin BPCRS*.

STORAGE

Desmopressin Intranasal Solution should be protected from light and stored at a temperature of 2° to 8°, unless otherwise justified and authorised.