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

Xylometazoline Nasal Drops

General Notices

Action and use

Alpha-adrenoceptor agonist.

DEFINITION

Xylometazoline Nasal Drops are a solution of Xylometazoline Hydrochloride in Purified Water.

The nasal drops comply with the requirements stated under Nasal Preparations and with the following requirements.

Content of xylometazoline hydrochloride, $C_{16}H_{24}N_2$,HCl

90.0 to 110.0% of the stated amount.

IDENTIFICATION

A. To a volume of the nasal drops containing 50 mg of Xylometazoline Hydrochloride add 5 mL of 1M *sodium hydroxide*, extract with 10 mL of *dichloromethane IR*, evaporate to dryness and dissolve the residue in 0.5 mL of *dichloromethane IR*. The *infrared absorption spectrum* of the resulting solution, Appendix II A, is concordant with the *reference spectrum* of xylometazoline (*RS 362*).
B. To a volume containing 0.5 mg of Xylometazoline Hydrochloride add 0.2 mL of a 5% w/v solution of *sodium nitroprusside* and 0.1 mL of 5M *sodium hydroxide* and allow to stand for 10 minutes. Add 1 mL of a 10% w/v solution of *sodium hydrogen carbonate*. A violet colour is produced.

TESTS

Acidity

pH, 5.6 to 6.6, Appendix V L.

***N*-(2-Aminoethyl)-4-*tert*-butyl-2,6-xylylacetamide**

Carry out the method for *thin-layer chromatography*, Appendix III A, using *silica gel* HF_{254} as the coating substance and a mixture of 200 volumes of *methanol* and 3 volumes of 13.5M *ammonia* as the mobile phase. Apply separately to the plate 5 µL of each of the following solutions. For solution (1) add a volume of the nasal drops containing 10 mg of Xylometazoline Hydrochloride to 30 mL of *water*, add 5 mL of 5M *sodium hydroxide*, mix, extract with three 20 mL quantities of *dichloromethane*, evaporate the combined extracts to dryness and dissolve the residue in 1 mL of *dichloromethane*. Solution (2) contains 0.03% w/v of *xylometazoline impurity A EPCRS* in *dichloromethane*. After removal of the plate, allow it to dry in air and spray with a solution prepared by dissolving 0.3 g of *ninhydrin* in a mixture of 100 mL of *butan-1-ol* and 3 mL of *glacial acetic acid*. Heat at 100° for 10 minutes, allow to cool, and spray with *dilute potassium iodobismuthate solution*. Any spot corresponding to xylometazoline impurity A [*N*-(2-aminoethyl)-4-*tert*-butyl-2,6-

xylylacetamide] in the chromatogram obtained with solution (1) is not more intense than the spot in the chromatogram obtained with solution (2).

ASSAY

To a volume of the nasal drops containing 10 mg of Xylometazoline Hydrochloride add 5 mL of *water*, 10 mL of 2M *hydrochloric acid* and 10 mL of *dichloromethane* and shake for 1 minute. Discard the dichloromethane layer and repeat the extraction with two further 10 mL quantities of *dichloromethane*. Add to the aqueous extract 10 mL of 5M *sodium hydroxide* and 10 mL of *dichloromethane*, shake for 1 minute and allow to separate. Filter the dichloromethane extract through glass wool and repeat the extraction with four further 10 mL quantities of *dichloromethane*. Evaporate the combined dichloromethane extracts almost to dryness on a water bath, removing the final traces of solvent in a current of air, and dissolve the residue in 10 mL of 0.01M *hydrochloric acid*. To 2 mL of this solution add 3 mL of *water*, 2.5 mL of 1M *sodium hydroxide* and 2.5 mL of a 5% w/v solution of *sodium nitroprusside*, mix and allow to stand protected from light for 10 minutes. Add 10 mL of a freshly prepared 8.3% w/v solution of *sodium hydrogen carbonate*, dilute to 100 mL with *water*, allow to stand protected from light for 10 minutes and measure the *absorbance* of the resulting solution at the maximum at 560 nm, Appendix II B, using in the reference cell a solution prepared by treating 5 mL of *water* and 2.5 mL of 1M *sodium hydroxide* in the same manner, beginning at the words 'and 2.5 mL of a 5% w/v solution of *sodium nitroprusside* ...'. Repeat the operation using a 0.1% w/v solution of *xylometazoline hydrochloride BPCRS*, diluted if necessary with *water*, in place of the nasal drops. Calculate the content of $C_{16}H_{24}N_2$,HCl in the nasal drops from the absorbances obtained using the declared content of $C_{16}H_{24}N_2$,HCl in *xylometazoline hydrochloride BPCRS*.

STORAGE

Xylometazoline Nasal Drops should be protected from light.