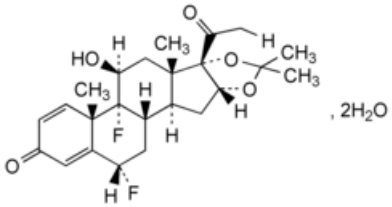
Edition: BP 2025 (Ph. Eur. 11.6 update)

Fluocinolone Acetonide Dihydrate

General Notices



$C_{24}H_{30}F_2O_6,2H_2O$ 488.5 (anhydrous) *67-73-2*

Action and use

Glucocorticoid.

Preparations

Fluocinolone Cream

Fluocinolone Ointment

DEFINITION

Fluocinolone Acetonide Dihydrate is 6α,9α-difluoro-11β,21-dihydroxy-16α-,17α-isopropylidenedioxypregna-1,4-diene-3,20-dione dihydrate. It contains not less than 96.0% and not more than 104.0% of $C_{24}H_{30}F_2O_6$, calculated with reference to the anhydrous substance.

CHARACTERISTICS

A white or almost white, crystalline powder.

Practically insoluble in *water*; freely soluble in *acetone*; soluble in *absolute ethanol*; sparingly soluble in *dichloromethane* and in *methanol*; practically insoluble in *hexane*.

IDENTIFICATION

A. The *infrared absorption spectrum*, Appendix II A, is concordant with the *reference spectrum* of fluocinolone acetonide dihydrate *(RS 147)*.
B. Complies with the test for *identification of steroids*, Appendix III A, using *impregnating solvent I* and *mobile phase H*. Apply 5 µL of each of the three solutions.
C. Complies with the test for *identification of steroids*, Appendix III A, using the conditions specified in test B but using solutions prepared in the following manner. For solution (1) dissolve 10 mg in 1.5 mL of *glacial acetic acid* in a separating funnel, add 0.5 mL of a 2% w/v solution of *chromium(VI) oxide* and allow to stand for 30 minutes. Add 5 mL of *water* and

2 mL of *dichloromethane* and shake vigorously for 2 minutes. Allow to separate and use the lower layer. Prepare solution (2) in the same manner but using 10 mg of *fluocinolone acetonide BPCRS*.

TESTS

Light absorption

Dissolve 15 mg in sufficient *absolute ethanol* to produce 100 mL. Dilute 10 mL of the solution to 100 mL with *absolute ethanol*. The A(1%, 1 cm) of the resulting solution at the maximum at 239 nm is 345 to 375, calculated with reference to the anhydrous substance, Appendix II B.

Specific optical rotation

In a 1% w/v solution in *1,4-dioxan*, +92 to +96, calculated with reference to the anhydrous substance, Appendix V F.

Related substances

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

(1) 0.25% w/v of the substance being examined in *acetonitrile*.
(2) 0.025% w/v each of *fluocinolone acetonide BPCRS* and *triamcinolone acetonide BPCRS* in 45% w/v of *acetonitrile*.
(3) Dilute 1 volume of solution (1) to 100 volumes with *acetonitrile*.
(4) Dilute 1 volume of solution (3) to 20 volumes with *acetonitrile*.

CHROMATOGRAPHIC CONDITIONS

(a) Use a stainless steel column (25 cm × 4.6 mm) packed with *base-deactivated end-capped octadecylsilyl silica gel for chromatography* (5 µm) (Hypersil BDS is suitable).
(b) Use isocratic elution and the mobile phase described below.
(c) Use a flow rate of 1 mL per minute.
(d) Use an ambient column temperature.
(e) Use a detection wavelength of 238 nm.
(f) Inject 20 µL of each solution.
(g) Allow the chromatography to proceed for 4 times the retention time of the principal peak.

MOBILE PHASE

45 volumes of *acetonitrile* and 55 volumes of *water*.

SYSTEM SUITABILITY

The test is not valid unless:

in the chromatogram obtained with solution (2), the *resolution factor* between the peaks due to triamcinolone acetonide and fluocinolone acetonide is at least 3.0;

in the chromatogram obtained with solution (4), the *signal-to-noise ratio* of the principal peak is at least 10.

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 (3) (1%);

the area of not more than one *secondary peak* is greater than 0.5 times the area of the principal peak in the chromatogram obtained with solution (3) (0.5%);

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 (3) (2.5%).

Disregard any peak with an area less than the area of the principal peak in the chromatogram obtained with solution (4) (0.05%).

Water

7.0 to 8.5% w/w, Appendix IX C. Use 0.5 g.

ASSAY

Carry out the *tetrazolium assay of steroids*, Appendix VIII J, and calculate the content of $C_{24}H_{30}F_2O_6$ from the *absorbance* obtained by repeating the operation using *fluocinolone acetonide BPCRS* in place of the substance being examined.

STORAGE

Fluocinolone Acetonide Dihydrate should be protected from light.