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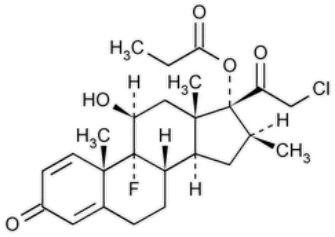
# Clobetasol Propionate



$C_{25}H_{32}ClFO_5$ 466.97

Pregna-1,4-diene-3,20-dione, 21-chloro-9-fluoro-11- hydroxy-16-methyl-17-(1-oxopropoxy)-, (11β,16β)-;

21-Chloro-9-fluoro-11β,17-dihydroxy-16β-methylpregna-1,4-diene-3,20-dione 17-propionate CAS RN®: 25122-46-7; UNII: 779619577M. CAS RN®: 25122-41-2; UNII: ADN79D536H.

## DEFINITION

Clobetasol Propionate contains NLT 97.0% and NMT 102.0% of $C_{25}H_{32}ClFO_5$, calculated on the dried basis.

## IDENTIFICATION

***Change to read:***

• ▲**Spectroscopic Identification Tests** ⟨197⟩, *Infrared Spectroscopy*: **197M**▲ (CN 1-May-2020)

## ASSAY

• **Procedure**

**Solution A:** 0.05 M monobasic sodium phosphate. Adjust with 85% phosphoric acid to a pH of 2.5.

**Mobile phase:** Acetonitrile, methanol, and *Solution A* (19:4:17)

**Internal standard solution:** 0.2 mg/mL of beclomethasone dipropionate in methanol

**Standard solution:** Dissolve a quantity of USP Clobetasol Propionate RS in methanol and *Internal standard solution* to obtain a final solution of 0.04 mg/mL of USP Clobetasol Propionate RS and 0.08 mg/mL of beclomethasone dipropionate.

**System suitability solution:** 0.001 mg/mL of USP Clobetasol Propionate Related Compound A RS and 0.1 mg/mL of USP Clobetasol Propionate RS in *Mobile phase*

**Sample solution:** Transfer 4 mg of Clobetasol Propionate to a 100-mL volumetric flask, add 40.0 mL of *Internal standard solution*, and dilute with methanol to volume.

**Chromatographic system**

(See *Chromatography* ⟨621⟩, *System Suitability*.)

**Mode:** LC

**Detector:** UV 240 nm

**Column:** 4.6-mm × 15-cm; packing L1

**Flow rate:** 1 mL/min

**Injection size:** 10 µL

**System suitability**

**Sample:** *System suitability solution*

[Note—The relative retention times for clobetasol propionate and clobetasol propionate related compound A are 1.0 and 1.1, respectively.]

**Suitability requirements**

**Resolution:** NLT 1.5 between clobetasol propionate and clobetasol propionate related compound A

**Column efficiency:** NLT 5000 theoretical plates for the clobetasol propionate peak

**Tailing factor:** NMT 2.0 for the clobetasol propionate peak

**Relative standard deviation:** NMT 2.0%

**Analysis**

**Samples:** *Standard solution* and *Sample solution*

[NOTE—The relative retention times for clobetasol propionate and beclomethasone dipropionate are 1.0 and 1.6, respectively.]

Calculate the percentage of $C_{25}H_{32}ClFO_5$ in the portion of Clobetasol Propionate taken:

$$\text{Result} = (R_U/R_S) \times (C_S/C_U) \times 100$$

$R_U$ = ratio of the clobetasol propionate peak area to the internal standard peak area from the *Sample solution*

$R_S$ = ratio of the clobetasol propionate peak area to the internal standard peak area from the *Standard solution*

$C_S$ = concentration of USP Clobetasol Propionate RS in the *Standard solution* (mg/mL)

$C_U$ = nominal concentration of clobetasol propionate in the *Sample solution* (mg/mL)

**Acceptance criteria:** 97.0%–102.0% on the dried basis

## IMPURITIES

### Inorganic Impurities

- **Residue on Ignition ⟨281⟩:** NMT 0.1%, using a platinum crucible

### Organic Impurities

- **Procedure**

**Solution A, Mobile phase, System suitability solution,** and **Chromatographic system:** Proceed as directed in the *Assay*.

**Sample solution:** 0.1 mg/mL of Clobetasol Propionate in *Mobile phase*

**Analysis**

**Sample:** *Sample solution*

Calculate the percentage of each impurity in the portion of Clobetasol Propionate taken:

$$\text{Result} = (r_U/r_T) \times 100$$

$r_U$ = peak area for each impurity

$r_T$ = sum of the areas of all of the peaks

**Acceptance criteria**

**Any individual impurity:** NMT 1.0%

**Total impurities:** NMT 2.5%

## SPECIFIC TESTS

- **Melting Range or Temperature ⟨741⟩:** Approximately 196°
- **Optical Rotation, *Specific Rotation* ⟨781S⟩:** +98° to +104° at 20°

**Sample solution:** 10 mg/mL in dioxane

- **Loss on Drying ⟨731⟩:** Dry a sample at 105° for 3 h: it loses NMT 2.0% of its weight.

## ADDITIONAL REQUIREMENTS

- **Packaging and Storage:** Preserve in tight, light-resistant containers.
- **USP Reference Standards ⟨11⟩**

USP Clobetasol Propionate RS

USP Clobetasol Propionate Related Compound A RS

9α-Fluoro-11β-hydroxy-16β-methyl 3-oxo-androsta-1,4-diene-17(*R*)-spiro-2'-[4'-chloro-5'-ethylfuran-3'(2'*H*)-one].

$C_{25}H_{30}ClFO_4$ 448.96

**Auxiliary Information** - Please check for your question in the FAQs before contacting USP.

| Topic/Question | Contact | Expert Committee |
|---|---|---|
| CLOBETASOL PROPIONATE | Documentary Standards Support | SM52020 Small Molecules 5 |

**Chromatographic Database Information:** Chromatographic Database

**Most Recently Appeared In:**
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