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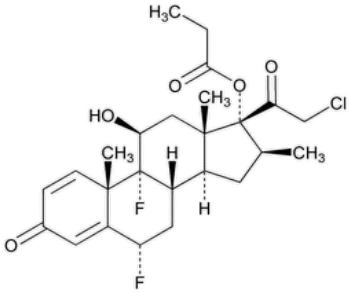
Halobetasol Propionate



$C_{25}H_{31}ClF_2O_5$ 484.96

Pregna-1,4-diene-3,20-dione, 21-chloro-6,9-difluoro-11-hydroxy-16-methyl-17-(1-oxopropoxy)-, (6α,11β,16β)-;

21-Chloro-6α,9-difluoro-11β,17-dihydroxy-16β-methylpregna-1,4-diene-3,20-dione 17-propionate CAS RN®: 66852-54-8; UNII: 91A0K1TY3Z.

DEFINITION

Halobetasol Propionate contains NLT 98.0% and NMT 102.0% of halobetasol propionate ($C_{25}H_{31}ClF_2O_5$), calculated on the dried basis.

IDENTIFICATION

Change to read:

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

• **B.** The retention time of the major peak of the *Sample solution* corresponds to that of the *Standard solution*, as obtained in the *Assay.*

ASSAY

• **Procedure**

Solution A: Acetonitrile and water (90:110)

Solution B: Acetonitrile

Mobile phase: See *Table 1*.

Table 1

Time (min)	Solution A (%)	Solution B (%)
0	100	0
2	64.5	35.5
22	64.5	35.5
23	100	0
30	100	0

Standard solution: 0.2 mg/mL of USP Halobetasol Propionate RS in acetonitrile

Sample solution: 0.2 mg/mL of Halobetasol Propionate in acetonitrile

Chromatographic system

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

Mode: LC

Detector: UV 240 nm

Column: 4.6-mm × 25-cm; 5-µm packing L1

Column temperature: 40°

Flow rate: 0.8 mL/min

Injection volume: 20 µL

System suitability

Sample: *Standard solution*

Tailing factor: 0.9–1.1

Suitability requirements

Relative standard deviation: NMT 0.73%

Analysis

Samples: *Standard solution* and *Sample solution*

Calculate the percentage of halobetasol propionate ($C_{25}H_{31}ClF_2O_5$) in the portion of Halobetasol Propionate taken:

$$\text{Result} = (r_U/r_S) \times (C_S/C_U) \times 100$$

r_U = peak response of halobetasol propionate from the *Sample solution*

r_S = peak response of halobetasol propionate from the *Standard solution*

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

C_U = concentration of Halobetasol Propionate in the *Sample solution* (mg/mL)

Acceptance criteria: 98.0%–102.0% on the dried basis

IMPURITIES

- **Residue on Ignition ⟨281⟩:** NMT 0.1%
- **Organic Impurities**

Mobile phase, Standard solution, and **Sample solution:** Prepare as directed in the *Assay*.

Chromatographic system

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

Mode: LC

Detector: UV 240 nm

Column: 4.6-mm × 25-cm; 5-µm packing L1

Column temperature: 40°

Flow rate: 0.8 mL/min

Injection volume: 20 µL

System suitability

Sample: *Standard solution*

Suitability requirements

Column efficiency: NLT 15,000 theoretical plates

Tailing factor: 0.9–1.1

Relative standard deviation: NMT 0.73%

Analysis

Sample: *Sample solution*

Calculate the percentage of any impurity in the portion of Halobetasol Propionate taken:

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

r_U = peak response of any individual impurity from the *Sample solution*

r_T = sum of all the peak responses from the *Sample solution*

Acceptance criteria: See *Table 2*.

Table 2

Name	Relative Retention Time	Acceptance Criteria, NMT (%)
21-Chloro diflorasone[a]	0.75	0.15
21-Acetate 17-propionate diflorasone[b]	0.88	0.15
11-Propionate 21-chloro diflorasone[c]	0.95	0.15
Halobetasol propionate	1.0	—
9-Chloro halobetasol propionate[d]	1.12	0.15
6-Chloro halobetasol propionate[e]	1.24	0.15
Any other individual impurity	—	0.10
Total impurities	—	1.0

[a] 21-Chloro-6α,9-difluoro-11β,17-dihydroxy-16β-methylpregna-1,4-diene-3,20-dione.

[b] 6α,9-Difluoro-11β,17,21-trihydroxy-16β-methylpregna-1,4-diene-3,20-dione 21-acetate 17-propionate.

[c] 21-Chloro-6α,9-difluoro-11β,17-dihydroxy-16β-methylpregna-1,4-diene-3,20-dione 11-propionate.

[d] 9,21-Dichloro-6α,-fluoro-11β,17-dihydroxy-16β-methylpregna-1,4-diene-3,20-dione 17-propionate.

[e] 6α,21-Dichloro-9-fluoro-11β,17-dihydroxy-16β-methylpregna-1,4-diene-3,20-dione 17-propionate.

SPECIFIC TESTS

- **Loss on Drying ⟨731⟩**

  Analysis: Dry a sample under vacuum at 105° for 3 h.

  Acceptance criteria: NMT 1.0%

- **Optical Rotation, *Specific Rotation*⟨781S⟩**

  Sample solution: 10 mg/mL in dioxane

  Acceptance criteria: +87° to +99°

ADDITIONAL REQUIREMENTS

- **Packaging and Storage:** Preserve in well-closed, light-resistant containers. Store between 2° and 8°.
- **USP Reference Standards ⟨11⟩**

  USP Halobetasol Propionate RS

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

Topic/Question	Contact	Expert Committee
HALOBETASOL PROPIONATE	Documentary Standards Support	SM22020 Small Molecules 2

Chromatographic Database Information: Chromatographic Database

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