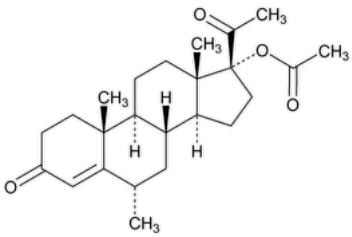
Status: Currently Official on 15-Feb-2025
Official Date: Official as of 01-May-2020
Document Type: USP Monographs
DocId: GUID-784E06DB-B336-423C-A0EF-4FE1B9D09C29_3_en-US
DOI: https://doi.org/10.31003/USPNF_M47910_03_01
DOI Ref: h2g1u

Medroxyprogesterone Acetate



$C_{24}H_{34}O_4$ 386.52

Pregn-4-ene-3,20-dione, 17-(acetyloxy)-6-methyl-, (6α)-;

17-Hydroxy-6α-methylpregn-4-ene-3,20-dione acetate CAS RN®: 71-58-9; UNII: C2QI4IOI2G.

DEFINITION

Medroxyprogesterone Acetate contains NLT 97.0% and NMT 103.0% of medroxyprogesterone acetate ($C_{24}H_{34}O_4$), calculated on the dried basis.

IDENTIFICATION

Change to read:

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

Change to read:

• **B.** ▲**Spectroscopic Identification Tests ⟨197⟩, *Ultraviolet-Visible Spectroscopy*: 197U**▲ (CN 1-May-2020)

Analytical wavelength: 241 nm

Sample solution: 10 µg/mL in alcohol

Acceptance criteria: Absorptivities, calculated on the dried basis, do not differ by more than 2.0%.

ASSAY

• **Procedure**

Mobile phase: Acetonitrile and water (40:60)

Standard solution: 1 mg/mL of USP Medroxyprogesterone Acetate RS in acetonitrile

Sample solution: 1 mg/mL of Medroxyprogesterone Acetate in acetonitrile

Chromatographic system

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

Mode: LC

Detector: UV 254 nm

Column: 4-mm × 30-cm; packing L1

Flow rate: 2 mL/min

Injection volume: 10 µL

System suitability

Sample: *Standard solution*

Suitability requirements

Tailing factor: NMT 2

Relative standard deviation: NMT 2.0%

Analysis

Samples: *Standard solution* and *Sample solution*

Calculate the percentage of medroxyprogesterone acetate ($C_{24}H_{34}O_4$) in the portion of Medroxyprogesterone Acetate taken:

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

r_U = peak response from the *Sample solution*

r_S = peak response from the *Standard solution*

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

C_U = concentration of Medroxyprogesterone Acetate in the *Sample solution* (mg/mL)

Acceptance criteria: 97.0%–103.0% on the dried basis

IMPURITIES

• **Organic Impurities**

Mobile phase: Acetonitrile and water (60:40)

System suitability solution: 40 µg/mL each of megestrol acetate and USP Medroxyprogesterone Acetate RS in *Mobile phase*

Standard solution: 50 µg/mL of USP Medroxyprogesterone Acetate RS in *Mobile phase*

Sample solution: 2.5 mg/mL of Medroxyprogesterone Acetate in *Mobile phase*

Chromatographic system

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

Mode: LC

Detector: UV 254 nm

Column: 4.6-mm × 25-cm; packing L1

Flow rate: 1 mL/min

Injection volume: 20 µL

System suitability

Samples: *System suitability solution* and *Standard solution*

Suitability requirements

Resolution: NLT 1.5 between megestrol acetate and medroxyprogesterone acetate, *System suitability solution*

Relative standard deviation: NMT 3.0%, *Standard solution*

Analysis

Samples: *Standard solution and Sample solution*

Calculate the percentage of each impurity in the portion of Medroxyprogesterone Acetate taken:

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

r_U = peak response for each impurity from the *Sample solution*

r_S = peak response of medroxyprogesterone acetate from the *Standard solution*

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

C_U = concentration of Medroxyprogesterone Acetate in the *Sample solution* (mg/mL)

Acceptance criteria

Individual impurity: NMT 1.0%

Total impurities: NMT 1.5%

• **Limit of Medroxyprogesterone Acetate Related Compound A**

Standard solution: 20 mg/mL of USP Medroxyprogesterone Acetate RS and 0.1 mg/mL of USP Medroxyprogesterone Acetate Related Compound A RS in methylene chloride

Sample solution: 20 mg/mL of Medroxyprogesterone Acetate in methylene chloride

Chromatographic system

(See *Chromatography ⟨621⟩, Thin-Layer Chromatography*.)

Mode: TLC

Adsorbent: 0.25-mm layer of chromatographic silica gel mixture

Application volume: 10 µL

Developing solvent system: Hexanes, *tert*-butyl methyl ether, and tetrahydrofuran (45:45:10)

Spray reagent: 200 mg/mL of *p*-toluenesulfonic acid in alcohol

Analysis

Samples: *Standard solution* and *Sample solution*

Develop the chromatogram until the solvent front has moved about 10 cm. Allow the plate to air-dry, and develop the chromatogram again until the solvent front has moved about 10 cm. Allow the plate to dry at 120° for 10 min. Spray the plate with *Spray reagent*. Heat the plate for 10 min at 120°, and examine the plate under UV light at 365 nm.

Acceptance criteria: NMT 0.5%; any blue fluorescent spot with an R_F value higher than that of the principal spot due to medroxyprogesterone acetate of the *Sample solution* is not more intense than the corresponding blue fluorescent spot of the *Standard solution*.

SPECIFIC TESTS

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

Sample solution: 10 mg/mL in dioxane

Acceptance criteria: +45° to +51°

• **Loss on Drying** ⟨731⟩

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

Acceptance criteria: NMT 1.0%

ADDITIONAL REQUIREMENTS

• **Packaging and Storage:** Preserve in tight, light-resistant containers. Store at 25°, excursions permitted between 15° and 30°.

• **USP Reference Standards** ⟨11⟩

USP Medroxyprogesterone Acetate RS

USP Medroxyprogesterone Acetate Related Compound A RS

4,5β-Dihydromedroxyprogesterone acetate.

$C_{24}H_{36}O_4$ 388.54

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

Topic/Question	Contact	Expert Committee
MEDROXYPROGESTERONE ACETATE	Documentary Standards Support	SM52020 Small Molecules 5

Chromatographic Database Information: Chromatographic Database

Most Recently Appeared In:
Pharmacopeial Forum: Volume No. PF 29(5)

Current DocID: GUID-784E06DB-B336-423C-A0EF-4FE1B9D09C29_3_en-US

DOI: https://doi.org/10.31003/USPNF_M47910_03_01

DOI ref: h2g1u