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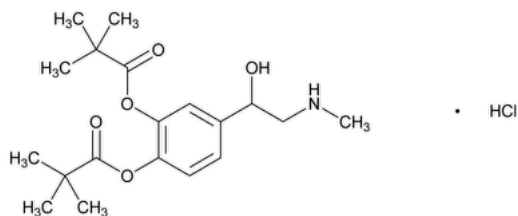
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Dipivefrin Hydrochloride


 $C_{19}H_{29}NO_5 \cdot HCl$ 387.90

Propanoic acid, 2,2-dimethyl-, 4-[1-hydroxy-2-(methylamino)ethyl]-1,2-phenylene ester, hydrochloride, (±)-;

(±)-3,4-Dihydroxy-α-[(methylamino)methyl]benzyl alcohol 3,4-dipivalate hydrochloride CAS RN®: 64019-93-8; UNII: 5QTH9UHV0K.

DEFINITION

Dipivefrin Hydrochloride contains NLT 98.5% and NMT 101.5% of dipivefrin hydrochloride ($C_{19}H_{29}NO_5 \cdot HCl$), calculated on the dried basis.

IDENTIFICATION

- **A. SPECTROSCOPIC IDENTIFICATION TESTS (197), Infrared Spectroscopy: 197K**
- **B.** The retention time of the major peak of the *Sample solution* corresponds to that of the *Standard solution*, as obtained in the Assay.
- **C. IDENTIFICATION TESTS—GENERAL, Chloride(191).**

Sample solution: 10 mg/mL of Dipivefrin Hydrochloride**Acceptance criteria:** Meets the requirements

ASSAY

PROCEDURE

Mobile phase: Acetonitrile, 0.014 M sodium dodecyl sulfate, and glacial acetic acid (24:15:1)**Standard solution:** 5 mg/mL of [USP Dipivefrin Hydrochloride RS](#) in 0.0015 N hydrochloric acid**Sample solution:** 5 mg/mL of Dipivefrin Hydrochloride in 0.0015 N hydrochloric acid

Chromatographic system

(See [Chromatography \(621\), System Suitability](#).)**Mode:** LC**Detector:** UV 254 nm**Column:** 4.6-mm × 25-cm; packing L1**Flow rate:** 2 mL/min**Injection volume:** 20 µL

System suitability

Sample: *Standard solution*

Suitability requirements

Tailing factor: NMT 1.5**Relative standard deviation:** NMT 0.6%

Analysis

Samples: *Standard solution* and *Sample solution*Calculate the percentage of dipivefrin hydrochloride ($C_{19}H_{29}NO_5 \cdot HCl$) in the portion of Dipivefrin Hydrochloride 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 Dipivefrin Hydrochloride RS](#) in the *Standard solution* (mg/mL) C_U = concentration of Dipivefrin Hydrochloride in the *Sample solution* (mg/mL)**Acceptance criteria:** 98.5%–101.5% on the dried basis

IMPURITIES

- **RESIDUE ON IGNITION (281):** NMT 0.3%

Change to read:

- **IRON (241), Procedures, Procedure 1** ▲ (CN 1-JUN-2023)

Standard iron solution: Use the *Standard Iron Solution* prepared as directed in the chapter.

Hydroxylamine solution: 100 mg/mL of hydroxylamine hydrochloride in water

Triazine solution: 1.25 mg/mL of 2,4,6-tri-(2-pyridyl)-S-triazine in methanol

Standard solution: Into a 50-mL color-comparison tube pipet 1 mL of *Standard iron solution*, add 42.0 mL of water, and mix.

Sample solution: Into a 50-mL color-comparison tube add 2.0 g of Dipivefrin Hydrochloride, 43.0 mL of water, and mix.

Analysis: To each of the tubes containing the *Standard solution* and the *Sample solution* add 5.0 mL of *Hydroxylamine solution* and 2.0 mL of *Triazine solution*, and mix.

Acceptance criteria: NMT 5 ppm; the color of the solution from the *Sample solution* is not darker than that of the solution from the *Standard solution*.

- **LIMITS OF EPINEPHRINE AND ADRENALONE**

Protect the *Standard solution* and the *Sample solution* from light.

Solution A: 0.1% (v/v) Anhydrous formic acid in water

Solution B: Acetonitrile and methanol (60:40)

Mobile phase: See [Table 1](#). Return to the original conditions and re-equilibrate the system.

Table 1

Time (min)	Solution A (%)	Solution B (%)
0	100	0
3	100	0
5	40	60
10	40	60

Diluent: 0.01 M hydrochloric acid

Standard solution: 0.02 mg/mL of [USP Epinephrine Bitartrate RS](#) and 0.01 mg/mL of [USP Adrenalone Hydrochloride RS](#) in *Diluent*.

Sample solution 10.0 mg/mL of Dipivefrin Hydrochloride in *Diluent*

Chromatographic system

(See [Chromatography \(621\), System Suitability](#).)

Mode: LC

Detector: UV 260 nm

Column: 4.6-mm × 15-cm; 5-μm packing L1

Flow rate: 1 mL/min

Injection volume: 10 μL

System suitability

Sample: *Standard solution*

Suitability requirements

Resolution: NLT 2.0 between epinephrine and adrenalone

Relative standard deviation: NMT 5%

Analysis

Samples: *Standard solution* and *Sample solution*

Calculate the percentage of epinephrine in the portion of Dipivefrin Hydrochloride taken:

$$\text{Result} = (r_U/r_S) \times (C_S/C_U) \times (M_{r1}/M_{r2}) \times 100$$

r_U = peak response of epinephrine from the *Sample solution*

r_S = peak response of epinephrine from the *Standard solution*

C_S = concentration of [USP Epinephrine Bitartrate RS](#) in the *Standard solution* (mg/mL)

C_U = concentration of Dipivefrin Hydrochloride in the *Sample solution* (mg/mL)

M_{r1} = molecular weight of epinephrine, 183.20