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Amiodarone Hydrochloride Injection

DEFINITION

Amiodarone Hydrochloride Injection is a sterile solution of Amiodarone Hydrochloride. It contains NLT 90.0% and NMT 110.0% of the labeled amount of amiodarone hydrochloride ($C_{25}H_{29}I_2NO_3 \cdot HCl$). It may contain suitable preservatives.

IDENTIFICATION

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

ASSAY

PROCEDURE

Buffer: 1.36 g/L of [potassium phosphate, monobasic](#) in [water](#) prepared as follows. To 1.36 g of [potassium phosphate, monobasic](#) in a 1-L volumetric flask add about 900 mL of [water](#) and 1 mL of [triethylamine](#). Adjust with [phosphoric acid](#) to a pH of 6.0. Dilute with [water](#) to volume.

Mobile phase: [Acetonitrile](#) and *Buffer* (80:20)

Diluent: [Acetonitrile](#) and [water](#) (60:40)

Standard solution: 0.025 mg/mL of [USP Amiodarone Hydrochloride RS](#) in *Diluent*

Sample solution: Nominally 0.025 mg/mL of amiodarone hydrochloride in *Diluent* from a suitable volume of Injection

Chromatographic system

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

Mode: LC

Detector: UV 240 nm. For *Identification B*, use a diode array detector in the range of 200–400 nm.

Column: 4.6-mm × 10-cm; 5-μm packing L1

Flow rate: 2 mL/min

Injection volume: 20 μL

Run time: NLT 2 times the retention time of amiodarone

System suitability

Sample: *Standard solution*

Suitability requirements

Tailing factor: NMT 2.0

Relative standard deviation: NMT 2.0%

Analysis

Samples: *Standard solution* and *Sample solution*

Calculate the percentage of the labeled amount of amiodarone hydrochloride ($C_{25}H_{29}I_2NO_3 \cdot HCl$) in the portion of Injection taken:

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

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

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

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

C_U = nominal concentration of amiodarone hydrochloride in the *Sample solution* (mg/mL)

Acceptance criteria: 90.0%–110.0%

OTHER COMPONENTS

CONTENT OF BENZYL ALCOHOL (if present)

Internal standard solution: 1 mg/mL of [phenol](#) in [isopropyl alcohol](#)

Standard stock solution: 1.6 of mg/mL of [USP Benzyl Alcohol RS](#) in [isopropyl alcohol](#)

Standard solution: 0.2 mg/mL of [phenol](#) and 0.19 mg/mL of [USP Benzyl Alcohol RS](#) in [isopropyl alcohol](#) from the *Internal standard solution* and the *Standard stock solution*

Sample stock solution: Nominally 1.6 mg/mL of benzyl alcohol in [isopropyl alcohol](#) from Injection

Sample solution: Nominally 0.2 mg/mL of [phenol](#) and 0.19 mg/mL of benzyl alcohol in [isopropyl alcohol](#) from the *Internal standard solution* and the *Sample stock solution*

Blank: 0.2 mg/mL of [phenol](#) in [isopropyl alcohol](#) from the *Internal standard solution*

Chromatographic system

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

Mode: GC

Detector: Flame ionization

Column: 0.32-mm × 30-m fused silica capillary; coated with 1-μm film of phase [G16](#)

Temperatures

Injection port: 200°

Column: 150°

Detector: 200°

Carrier gas: Nitrogen

Flow rate: 10 mL/min

Injection volume: 1 μL

Injection type: Split; split ratio, 10:1

System suitability

Sample: *Standard solution*

Suitability requirements

Relative standard deviation: NMT 2.0% for the peak response ratio of benzyl alcohol to phenol

Analysis

Samples: *Standard solution* and *Sample solution*

Calculate the percentage of the labeled amount of benzyl alcohol in the portion of Injection taken:

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

R_U = peak response ratio of benzyl alcohol to phenol from the *Sample solution*

R_S = peak response ratio of benzyl alcohol to phenol from the *Standard solution*

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

C_U = nominal concentration of benzyl alcohol in the *Sample solution* (mg/mL)

Acceptance criteria: 90.0%–110.0%

IMPURITIES

Change to read:

• LIMIT OF IODIDE

Use freshly prepared solutions in amber glassware.

Amiodarone stock solution: Nominally 5 mg/mL of amiodarone hydrochloride in [water](#) from Injection

Potassium iodide solution: 88.2 μg/mL of [potassium iodide](#) in [water](#)

Potassium iodate solution: 10.7 g/L of ▲[potassium iodate](#)▲ (ERR 1-Jul-2021) in [water](#)

Standard solution: 4.41 μg/mL of potassium iodide prepared as follows. Into a suitable flask pipet 15.0 mL of *Amiodarone stock solution*, 1.0 mL of 0.1 N [hydrochloric acid](#), 1.0 mL of *Potassium iodide solution*, 1.0 mL of *Potassium iodate solution*, and 2.0 mL of [water](#). Mix, and allow to stand for 4 h. Protect from light.

Sample solution: Nominally 3.75 mg/mL of amiodarone hydrochloride prepared as follows. Into a suitable flask pipet 15.0 mL of *Amiodarone stock solution*, 1.0 mL of 0.1 N [hydrochloric acid](#), 1.0 mL of *Potassium iodate solution*, and 3.0 mL of water. Mix, and allow to stand for 4 h. Protect from light.

Blank: Into a suitable flask pipet 15.0 mL of *Amiodarone stock solution*, 1.0 mL of 0.1 N [hydrochloric acid](#), and 4.0 mL of water. Mix, and allow to stand for 4 h. Protect from light.

Instrumental conditions

Mode: Vis

Analytical wavelength: 420 nm

Cell: 1 cm

Analysis

Samples: *Standard solution*, *Sample solution*, and *Blank*

Calculate the amount of iodide, in ppm, in the portion of Injection taken:

$$\text{Result} = (A_U - A_B)/[(A_S - A_B) - (A_U - A_B)] \times (C_S/C_U) \times (M_{r1}/M_{r2})$$

A_U = absorbance of the *Sample solution*