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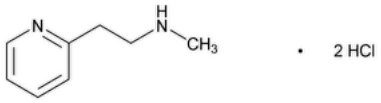
Betahistine Hydrochloride



$C_8H_{12}N_2 \cdot 2HCl$ 209.12

2-Pyridineethanamine, *N*-methyl-, dihydrochloride;

2-[2-(Methylamino)ethyl]pyridine, dihydrochloride CAS RN®: 5579-84-0.

DEFINITION

Betahistine Hydrochloride contains NLT 99.0% and NMT 101.0% of betahistine hydrochloride ($C_8H_{12}N_2 \cdot 2HCl$), calculated on the dried basis.

IDENTIFICATION

Change to read:

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

Meets the requirements.

• **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 ⟨191⟩, *Chemical Identification Tests, Chloride*:** Meets the requirements

ASSAY

• **Procedure**

Solution A: 0.69 mg/mL of ammonium acetate in water. Adjust with glacial acetic acid to a pH of 4.7.

Mobile phase: Acetonitrile and *Solution A* containing 2.88 mg/mL of sodium lauryl sulfate (7:13)

Standard solution: 0.38 mg/mL of USP Betahistine Hydrochloride RS in *Mobile phase*

Sample solution: 0.38 mg/mL of Betahistine Hydrochloride in *Mobile phase*

Chromatographic system

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

Mode: LC

Detector: UV 254 nm

Column: 3.0-mm × 15-cm; 5-µm packing L1

Column temperature: 40°

Flow rate: 0.5 mL/min

Injection volume: 10 µL

System suitability

Sample: *Standard solution*

Suitability requirements

Tailing factor: NMT 2.0

Relative standard deviation: NMT 0.73%

Analysis

Samples: *Standard solution* and *Sample solution*

Calculate the percentage of betahistine hydrochloride ($C_8H_{12}N_2 \cdot 2HCl$) in the portion of Betahistine Hydrochloride taken:

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

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

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

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

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

Acceptance criteria: 99.0%–101.0% on the dried basis

IMPURITIES

• **Residue on Ignition ⟨281⟩:** NMT 0.1%

• **Organic Impurities**

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

Analysis

Sample: *Sample solution*

Calculate the percentage of each impurity in the portion of Betahistine Hydrochloride taken:

$$\text{Result} = (r_U/r_T) \times 1/F \times 100$$

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

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

F = relative response factor of each impurity (see *Table 1*); 1.0 for all other peaks

Acceptance criteria: See *Table 1*.

Table 1

Name	Relative Retention Time	Relative Response Factor	Acceptance Criteria, NMT (%)
2-(2-Hydroxyethyl) pyridine[a]	0.3	1.5	0.2
2-Vinylpyridine[a]	0.4	2.0	0.2
N-Methyl-*N*,*N*-bis(2-pyridin-2-yl-ethyl) amine[b]	2.4	1.1	0.2
Any unspecified impurity	—	—	0.10
Total impurities	—	—	0.5

[a] This impurity is a hydrochloride salt.

[b] This impurity exists as a trihydrochloride.

SPECIFIC TESTS

• **pH ⟨791⟩**

Sample: 100 mg/mL of Betahistine Hydrochloride in water

Acceptance criteria: 2.0–3.0

• **Loss on Drying ⟨731⟩**

Analysis: Dry between 100° and 105° to constant weight.

Acceptance criteria: NMT 1.0%

ADDITIONAL REQUIREMENTS

• **USP Reference Standards ⟨11⟩**

USP Betahistine Hydrochloride RS

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

Topic/Question	Contact	Expert Committee
BETAHISTINE HYDROCHLORIDE	Documentary Standards Support	SM22020 Small Molecules 2

Chromatographic Database Information: Chromatographic Database

Most Recently Appeared In:
Pharmacopeial Forum: Volume No. PF 43(5)

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