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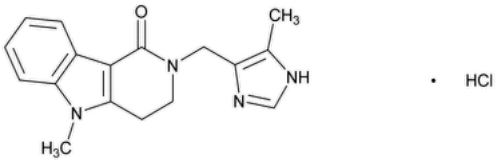
Alosetron Hydrochloride



• HCl

$C_{17}H_{18}N_4O \cdot HCl$ 330.82

1*H*-Pyrido[4,3-*b*]indol-1-one, 2,3,4,5-tetrahydro-5-methyl-2-[(5-methyl-1*H*-imidazol-4-yl)methyl]-, hydrochloride;

2,3,4,5-Tetrahydro-5-methyl-2-[(5-methylimidazol-4-yl)methyl]-1*H*-pyrido[4,3-*b*]indol-1-one hydrochloride CAS RN®: 122852-69-1.

DEFINITION

Alosetron Hydrochloride contains NLT 98.0% and NMT 102.0% of alosetron hydrochloride ($C_{17}H_{18}N_4O \cdot HCl$), calculated on the anhydrous 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⟩, *Chloride*:** Meets the requirements of the silver nitrate precipitation test

ASSAY

• **Procedure**

Protect solutions containing alosetron hydrochloride from light.

Buffer: 0.02 M monobasic sodium phosphate. Adjust with phosphoric acid to a pH of 3.0.

Mobile phase: *Buffer* and acetonitrile (80:20)

Standard solution: 0.05 mg/mL of USP Alosetron Hydrochloride RS in *Mobile phase*

Sample solution: 0.05 mg/mL of Alosetron Hydrochloride in *Mobile phase*

Chromatographic system

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

Mode: LC

Detector: UV 220 nm

Column: 4.6-mm × 7.5-cm; 3-µm packing L1

Flow rate: 1.0 mL/min

Injection volume: 5 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 alosetron hydrochloride ($C_{17}H_{18}N_4O \cdot HCl$) in the portion of Alosetron 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 Alosetron Hydrochloride RS in the *Standard solution* (mg/mL)

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

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

IMPURITIES

• **Residue on Ignition ⟨281⟩:** NMT 0.2%

Change to read:

• **Organic Impurities**

Protect solutions containing alosetron hydrochloride from light.

Buffer and **Chromatographic system:** Proceed as directed in the *Assay.*

Solution A: *Buffer*

Solution B: Acetonitrile

Mobile phase: See *Table 1*. Return to original conditions and re-equilibrate the system.

Table 1

Time (min)	Solution A (%)	Solution B (%)
0	90	10
5	90	10
20	50	50
25	50	50

Diluent: *Buffer* and acetonitrile (90:10)

System suitability solution: 0.5 mg/mL of USP Alosetron Hydrochloride RS and 0.5 µg/mL of USP Alosetron Related Compound A RS in *Diluent*

Standard solution: 0.5 µg/mL of USP Alosetron Hydrochloride RS in *Diluent*

Sensitivity solution: 0.25 µg/mL of USP Alosetron Hydrochloride RS in *Diluent* from the *Standard solution*

Sample solution: 500 µg/mL of Alosetron Hydrochloride in *Diluent*

System suitability

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

Suitability requirements

Resolution: NLT ▲3▲ (ERR 1-May-2020) between alosetron and alosetron related compound A, *System suitability solution*

Relative standard deviation: NMT 5.0%, *Standard solution*

Signal-to-noise ratio: NLT 10, *Sensitivity solution*

Analysis

Samples: *Standard solution* and *Sample solution*

Calculate the percentage of each individual impurity in the portion of Alosetron Hydrochloride taken:

$$\text{Result} = (r_U/r_S) \times (C_S/C_U) \times (1/F) \times 100$$

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

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

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

C_U = concentration of Alosetron Hydrochloride in the *Sample solution* (µg/mL)

F = relative response factor (see *Table 2*)

Acceptance criteria: See *Table 2*.

Table 2

Name	Relative Retention Time	Relative Response Factor	Acceptance Criteria, NMT (%)
Alosetron	1.0	—	—
Alosetron related compound A	1.1	1.3	0.15

Name	Relative Retention Time	Relative Response Factor	Acceptance Criteria, NMT (%)
Any other individual impurity	—	1.0	0.10
Total impurities	—	—	0.8

SPECIFIC TESTS

• **Water Determination** ⟨921⟩, *Method I*, *Method Ia*: NMT 1.0%

ADDITIONAL REQUIREMENTS

• **Packaging and Storage:** Preserve in tight containers. Store between 15° and 30°, protected from light.

• **USP Reference Standards** ⟨11⟩

USP Alosetron Hydrochloride RS

USP Alosetron Related Compound A RS

Dealkyl alosetron;
5-Methyl-2,3,4,5-tetrahydro-1*H*-pyrido[4,3-*b*]indol-1-one.
$C_{12}H_{12}N_2O$ 200.24

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

Topic/Question	Contact	Expert Committee
ALOSETRON HYDROCHLORIDE	Documentary Standards Support	SM32020 Small Molecules 3
REFERENCE STANDARD SUPPORT	RS Technical Services RSTECH@usp.org	SM32020 Small Molecules 3

Chromatographic Database Information: Chromatographic Database

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