Status: Currently Official on 13-Feb-2025
Official Date: Official as of 01-May-2020
Document Type: USP Monographs
DocId: GUID-9B484DAE-D7F6-4D9C-B5B2-0DD7268996F0_3_en-US
DOI: https://doi.org/10.31003/USPNF_M1679_03_01
DOI Ref: 66pty

Altretamine Capsules

DEFINITION

Altretamine Capsules contain NLT 90.0% and NMT 110.0% of the labeled amount of altretamine ($C_9H_{18}N_6$).

IDENTIFICATION

Change to read:

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

Sample: Remove as completely as possible the contents of 5 Capsules, and dissolve, with shaking, in 10 mL of chloroform. Filter, and evaporate the chloroform solution to dryness.

Acceptance criteria: Meet 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*.

ASSAY

Change to read:

• **Procedure**

▲**Solution A:** 1.7 g/L of dibasic potassium phosphate in water. Adjust with phosphoric acid to a pH of 7.0 ± 0.1.

Solution B: Acetonitrile

Mobile phase: See *Table 1*.

Table 1

Time (min)	Solution A (%)	Solution B (%)
0	100	0
3	100	0
25	50	50
28	50	50
29	100	0
35	100	0

Standard stock solution: 1.0 mg/mL of USP Altretamine RS prepared as follows. Dissolve a suitable amount of USP Altretamine RS in about 40% of the flask volume of acetonitrile. Sonicate as needed to dissolve. Add water almost to volume and allow it to reach room temperature. Dilute with water to volume and mix.

Standard solution: 0.1 mg/mL of USP Altretamine RS in water from *Standard stock solution*

Sample stock solution: Nominally 1.0 mg/mL of altretamine from Capsules prepared as follows. Transfer NLT 20 Capsules to a suitable volumetric flask. Dissolve in about 40% of the flask volume of acetonitrile. Sonicate as needed to dissolve. Add water almost to volume and allow the solution to reach room temperature. Dilute with water to volume and mix.

Sample solution: Nominally 0.1 mg/mL of altretamine in water from *Sample stock solution*

Chromatographic system

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

Mode: LC

Detector: UV 242 nm

Column: 4.6-mm × 25-cm; 5-µm packing L96

Flow rate: 1.5 mL/min

Injection volume: 20 µL. [Note—In-line filter may be needed to reduce system pressure.]▲ (USP 1-May-2019)

System suitability

Sample: *Standard solution*

Suitability requirements

Tailing factor: NMT 1.5

Relative standard deviation: NMT 2.0%

Analysis

Samples: *Standard solution* and *Sample solution*

Calculate the percentage of the labeled amount of altretamine ($C_9H_{18}N_6$) in the portion of Capsules 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 Altretamine RS in the *Standard solution* (mg/mL)

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

Acceptance criteria: 90.0%–110.0%

IMPURITIES

Add the following:

▲• **Organic Impurities**

Solution A, Solution B, Mobile phase, Standard solution, and **Sample solution:** Prepare as directed in the *Assay*.

Sensitivity solution: 0.1 µg/mL of USP Altretamine RS in water from *Standard solution*

Chromatographic system

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

Mode: LC

Detector: UV 215 and 242 nm (see *Table 2*)

Column: 4.6-mm × 25-cm; 5-µm packing L96

Flow rate: 1.5 mL/min

Injection volume: 20 µL

System suitability

Samples: *Standard solution* and *Sensitivity solution*

Suitability requirements

Tailing factor: NMT 1.5, *Standard solution*

Relative standard deviation: NMT 2.0%, *Standard solution*

Signal-to-noise ratio: NLT 10 for the altretamine peak, *Sensitivity solution*

Analysis

Samples: *Standard solution* and *Sample solution*

Calculate the percentage of each impurity in the portion of Capsules 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 altretamine from the *Standard solution*

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

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

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

Acceptance criteria: See *Table 2*. The reporting threshold is NMT 0.1%.

Table 2

Name	Relative Retention Time	Relative Response Factor	Detector (nm)	Acceptance Criteria, NMT (%)
Altretamine diketo analog[a]	0.21	0.44	242	0.4

Name	Relative Retention Time	Relative Response Factor	Detector (nm)	Acceptance Criteria, NMT (%)
Altretamine chloro keto analog[b]	0.35	0.60	215	0.4
Altretamine keto analog[c]	0.56	1.3	242	0.4
Altretamine dichloro analog[d]	0.87	0.87	242	0.4
Altretamine monochloro analog[e]	0.96	1.3	242	0.4
Altretamine	1.00	1.0	215, 242[f]	—
Any other individual impurity	—	—	242	0.4
Total impurities	—	—	—	1.0▲ (USP 1-May-2019)

[a] 6-(Dimethylamino)-1,3,5-triazine-2,4[1*H*,3*H*]-dione.

[b] 4-Chloro-6-(dimethylamino)-1,3,5-triazine-2[1*H*]-one.

[c] 4,6-Bis(dimethylamino)-1,3,5-triazine-2[1*H*]-one.

[d] 4,6-Dichloro-*N*,*N*-dimethyl-1,3,5-triazine-2-amine.

[e] 6-Chloro-N^2,N^2,N^4,N^4-tetramethyl-1,3,5-triazine-2,4-diamine.

[f] Use the detector consistent with the respective impurity.

PERFORMANCE TESTS

• **Dissolution** ⟨711⟩

Medium: 0.1 N hydrochloric acid; 900 mL

Apparatus 1: 100 rpm

Time: 30 min

Detector: UV 242 nm

Standard solution: USP Altretamine RS in *Medium*

Analysis: Determine the amount of altretamine ($C_9H_{18}N_6$) dissolved from UV absorbances on filtered portions of the solution under test, suitably diluted if necessary with *Medium*, compared with the *Standard solution*.

Tolerances: NLT 80% (*Q*) of the labeled amount of altretamine ($C_9H_{18}N_6$) is dissolved.

• **Uniformity of Dosage Units** ⟨905⟩**:** Meet the requirements

ADDITIONAL REQUIREMENTS

• **Packaging and Storage:** Preserve in tight, light-resistant containers, and store at controlled room temperature.

• **USP Reference Standards** ⟨11⟩

USP Altretamine RS

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

Topic/Question	Contact	Expert Committee
ALTRETAMINE CAPSULES	Documentary Standards Support	SM32020 Small Molecules 3

Chromatographic Database Information: Chromatographic Database

Most Recently Appeared In:
Pharmacopeial Forum: Volume No. 46(4)

Current DocID: GUID-9B484DAE-D7F6-4D9C-B5B2-0DD7268996F0_3_en-US
DOI: https://doi.org/10.31003/USPNF_M1679_03_01
DOI ref: 66pty