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# Triazolam Tablets

**DEFINITION**
Triazolam Tablets contain NLT 90.0% and NMT 110.0% of the labeled amount of triazolam ($C_{17}H_{12}Cl_2N_4$).

**IDENTIFICATION**

***Change to read:***

• **▲A.▲** (USP 1-Aug-2023) The retention time of the major peak of the *Sample solution* corresponds to that of the *Standard solution*, as obtained in the *Assay*. **▲▲** (USP 1-Aug-2023)

***Add the following:***

**▲• B.** The UV spectrum of the major peak of the *Sample solution* corresponds to that of the *Standard solution*, as obtained in the *Assay*.**▲** (USP 1-Aug-2023)

**ASSAY**

***Change to read:***

• **Procedure**

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

**Solution B:** Acetonitrile

**Mobile phase:** See *Table 1*.

**Table 1**

| Time (min) | Solution A (%) | Solution B (%) |
|---|---|---|
| 0 | 78 | 22 |
| 2.0 | 78 | 22 |
| 20.0 | 10 | 90 |
| 25.0 | 10 | 90 |
| 25.1 | 78 | 22 |
| 30.0 | 78 | 22 |

**Diluent:** Acetonitrile and water (45:55)

**Standard solution:** 5 µg/mL of USP Triazolam RS in *Diluent*. Sonicate to dissolve if necessary.

**Sample solution:** Nominally 5 µg/mL of triazolam from Tablets prepared as follows. Transfer an appropriate quantity of triazolam from finely powdered Tablets (NLT 20) to a suitable volumetric flask. Add 10% of the flask volume of water, mix by swirling, and allow to stand for 10 min. Vortex for 10 s, add 45% of flask volume of acetonitrile, shake using mechanical shaker for 10 min, dilute with water to volume, and mix well. Centrifuge and use the clear supernatant.

**Chromatographic system**

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

**Mode:** LC

**Detector:** UV 257 nm. For *Identification B*, use a diode array detector in the range of 200–400 nm.

**Column:** 4.6-mm × 10-cm; 3.5-µm packing L1

**Column temperature:** 35°

**Flow rate:** 1.2 mL/min

**Injection volume:** 50 µL

**System suitability**

**Sample:** *Standard solution*

**Suitability requirements**

**Tailing factor:** NMT 2.0

**Relative standard deviation:** NMT 1.0%

**Analysis**

**Samples:** *Standard solution* and *Sample solution*

Calculate the percentage of the labeled amount of triazolam ($C_{17}H_{12}Cl_2N_4$) in the portion of Tablets taken:

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

$r_U$ = peak response of triazolam from the *Sample solution*

$r_S$ = peak response of triazolam from the *Standard solution*

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

$C_U$ = nominal concentration of triazolam in the *Sample solution* (µg/mL)

▲ (USP 1-Aug-2023)

**Acceptance criteria:** 90.0%–110.0%

**PERFORMANCE TESTS**

***Change to read:***

• **Dissolution** ⟨711⟩

**Medium:** Water; 500 mL

**Apparatus 2:** 50 rpm

**Time:** 30 min

**Standard stock solution:** 0.025 mg/mL of USP Triazolam RS in methanol

**Standard solution:** (*L*/500) mg/mL of USP Triazolam RS, where *L* is the label claim of triazolam in ▲mg/Tablet▲ (ERR 1-Aug-2023), prepared as follows. For each 0.125 mg of the labeled amount of triazolam/Tablet, add 2.0 mL of *Standard stock solution* to a 200-mL volumetric flask. Dilute with water to volume.

**Sample solution:** Pass a portion of the solution under test through a suitable filter.

**Mobile phase:** Acetonitrile and water (40:60)

**Chromatographic system**

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

**Mode:** LC

**Detector:** UV 222 nm

**Column:** 4.6-mm × 10-cm ▲▲ (USP 1-Aug-2023); packing L7

**Flow rate:** 1 mL/min

**Injection volume:** 200 µL

**System suitability**

**Sample:** *Standard solution*

**Suitability requirements**

**Column efficiency:** NLT 500 theoretical plates

**Relative standard deviation:** NMT 3.0%

**Analysis**

**Samples:** *Standard solution* and *Sample solution*

Calculate the percentage of ▲the labeled amount of triazolam▲ (USP 1-Aug-2023) ($C_{17}H_{12}Cl_2N_4$) dissolved:

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

$r_U$ = peak response of triazolam from the *Sample solution*

$r_S$ = peak response of triazolam from the *Standard solution*

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

$V$ = volume of *Medium*, 500 mL

$L$ = label claim (mg/Tablet)

**Tolerances:** NLT 70% ($Q$) of the labeled amount of triazolam ($C_{17}H_{12}Cl_2N_4$) is dissolved.

***Change to read:***

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

▲▲ (USP 1-Aug-2023)

***Add the following:***

**▲IMPURITIES**

• **Organic Impurities**

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

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

**Sensitivity solution:** 0.05 µg/mL of USP Triazolam RS in *Diluent*

**Sample solution:** Nominally 50 µg/mL of triazolam from Tablets prepared as follows. Transfer an appropriate quantity of triazolam from finely powdered Tablets (NLT 20) to a suitable volumetric flask. Add 10% of the flask volume of water, mix by swirling, and allow to stand for 10 min. Vortex for 10 s, add 45% of flask volume of acetonitrile, shake using mechanical shaker for 10 min, dilute with water to volume, and mix well. Centrifuge a portion and use the clear supernatant.

**System suitability**

**Samples:** *Standard solution* and *Sensitivity solution*

**Suitability requirements**

**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 triazolam *N*-oxide and any unspecified degradation product in the portion of Tablets taken:

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

$r_U$ = peak response of each degradation product from the *Sample solution*

$r_S$ = peak response of triazolam from the *Standard solution*

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

$C_U$ = nominal concentration of triazolam in the *Sample solution* (µg/mL)

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

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

**Table 2**

| Name | Relative Retention Time | Relative Response Factor | Acceptance Criteria, NMT (%) |
|---|---|---|---|
| Triazolam *N*-oxide[a] | 0.85 | 1.8 | 1.0 |
| Triazolam | 1.00 | — | — |

| Name | Relative Retention Time | Relative Response Factor | Acceptance Criteria, NMT (%) |
|---|---|---|---|
| Any unspecified degradation product | — | 1.0 | 1.0 |
| Total degradation products | — | — | 2.0 |

[a] 8-Chloro-6-(2-chlorophenyl)-1-methyl-4*H*-*s*-triazolo[4,3-*a*][1,4]benzodiazepine 5-oxide.

▲ (USP 1-Aug-2023)

**ADDITIONAL REQUIREMENTS**

***Change to read:***

• **Packaging and Storage:** Preserve in tight, light-resistant containers. ▲Store at controlled room temperature.▲ (USP 1-Aug-2023)

• **USP Reference Standards** ⟨11⟩
USP Triazolam RS

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

| Topic/Question | Contact | Expert Committee |
|---|---|---|
| TRIAZOLAM TABLETS | Documentary Standards Support | SM42020 Small Molecules 4 |
| REFERENCE STANDARD SUPPORT | RS Technical Services<br>RSTECH@usp.org | SM42020 Small Molecules 4 |

**Chromatographic Database Information:** Chromatographic Database

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