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Olanzapine Tablets

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DEFINITION

Olanzapine Tablets contain NLT 90.0% and NMT 110.0% of the labeled amount of olanzapine ($C_{17}H_{20}N_4S$).

IDENTIFICATION

• **SPECTROSCOPIC IDENTIFICATION TESTS** (197), *Infrared Spectroscopy*: 197K

Standard: Dissolve 10 mg of [USP Olanzapine RS](#) in 10 mL of [chloroform](#). Evaporate to dryness on a water bath maintained at 55°. Use about 2 mg of the residue to prepare a [potassium bromide](#) pellet.

Sample: Crush NLT 5 Tablets, and transfer the powder equivalent to 30 mg of olanzapine to a suitable container. Add 30 mL of [chloroform](#), and sonicate for 15 min to dissolve. Pass through a suitable filter, and evaporate the filtrate to dryness on a water bath maintained at 55°. Use about 2 mg of the residue to prepare a [potassium bromide](#) pellet.

Acceptance criteria: Meet the requirements

ASSAY

• PROCEDURE

[NOTE—A few drops of [acetonitrile](#), not to exceed 5% of the final volume, may be added to the *Standard solution* and *Sample solution* before final dilution to reduce foaming.]

Buffer 1: 6.9 g/L of [monobasic sodium phosphate](#). Adjust with [phosphoric acid](#) to a pH of 2.5.

Buffer 2: 12 g/L of [sodium dodecyl sulfate](#) in *Buffer 1*

Mobile phase: [Acetonitrile](#) and *Buffer 2* (1:1)

System suitability solution: 0.1 mg/mL of [USP Olanzapine RS](#) and 0.01 mg/mL of [USP Olanzapine Related Compound A RS](#) in *Mobile phase*

Standard solution: 0.1 mg/mL of [USP Olanzapine RS](#) in *Mobile phase*

Sample solution: Transfer a known quantity of Tablets (NLT 5), equivalent to NLT 25 mg of olanzapine, to a suitable volumetric flask. Dilute with *Mobile phase* to volume, mix, and sonicate for 10 min. Centrifuge a portion of this solution, and dilute the clear supernatant with *Mobile phase* to obtain a solution containing about 0.1 mg/mL of olanzapine. [NOTE—Agitation of the flask may be necessary before sonication to prevent Tablets from adhering to the flask, making disintegration and dissolution difficult.]

Chromatographic system

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

Mode: LC

Detector: UV 260 nm

Column: 4.6-mm × 15-cm; 5-μm packing [L7](#)

Flow rate: 1.5 mL/min

Injection volume: 20 μL

System suitability

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

[NOTE—The relative retention times for olanzapine related compound A and olanzapine are 0.89 and 1.0, respectively.]

Suitability requirements

Resolution: NLT 2.0 between olanzapine and olanzapine related compound A, *System suitability solution*

Tailing factor: NMT 1.8, *Standard solution*

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

Analysis

Samples: *Standard solution* and *Sample solution*

Calculate the percentage of the labeled amount of olanzapine ($C_{17}H_{20}N_4S$) in the portion of Tablets 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 Olanzapine RS](#) in the *Standard solution* (mg/mL)

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

Acceptance criteria: 90.0%–110.0%

PERFORMANCE TESTS

• [DISSOLUTION \(711\)](#)

Test 1

Medium: 0.1 N [hydrochloric acid](#); 900 mL

Apparatus 2: 50 rpm

Time: 30 min

Mobile phase: 10 g/L of [ammonium acetate](#) in a mixture of [methanol](#) and [water](#) (2:3). Adjust with [hydrochloric acid](#) to a pH of 4.0.

Standard solution: (L/1000) mg/mL of [USP Olanzapine RS](#) in *Medium*, where L is the label claim in mg/Tablet. Transfer 5.0 mL of this solution to a tube, and add 2.0 mL of *Mobile phase*.

Sample solution: Pass a portion of the solution under test through a suitable filter of 0.45-μm pore size. Transfer 5.0 mL of the filtrate to a tube, and add 2.0 mL of *Mobile phase*.

Chromatographic system

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

Mode: LC

Detector: UV 260 nm

Column: 4.6-mm × 15-cm; 5-μm packing [L10](#)

Flow rate: 1.5 mL/min

Injection volume: 50 μL

System suitability

Sample: *Standard solution*

Suitability requirements

Relative standard deviation: NMT 2.0%

Analysis

Samples: *Standard solution* and *Sample solution*

Calculate the percentage of the labeled amount of olanzapine ($C_{17}H_{20}N_4S$) dissolved:

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

r_U = peak response from the *Sample solution*

r_S = peak response from the *Standard solution*

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

V = volume of *Medium*, 900 mL

L = label claim (mg/Tablet)

Tolerances: NLT 80% (Q) of the labeled amount of olanzapine ($C_{17}H_{20}N_4S$) is dissolved.

Test 2: If the product complies with this test, the labeling indicates that it meets USP *Dissolution Test 2*.

Medium: 0.1 N [hydrochloric acid](#); 900 mL

Apparatus 2: 50 rpm

Time: 20 min

Mobile phase: 10 g/L of [ammonium acetate](#) in a mixture of [methanol](#) and [water](#) (2:3). Adjust with [hydrochloric acid](#) to a pH of 4.0. Pass through a suitable filter of 0.45-μm pore size.

Standard stock solution: 0.28 mg/mL of [USP Olanzapine RS](#) prepared as follows. Transfer a suitable amount of [USP Olanzapine RS](#) to a suitable volumetric flask. Add about 8% of the final flask volume of [acetonitrile](#). Sonicate to dissolve the Reference Standard. Dilute with *Medium* to volume.