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Olanzapine and Fluoxetine Capsules

DEFINITION

Olanzapine and Fluoxetine Capsules contain an amount of Olanzapine and Fluoxetine Hydrochloride equivalent to NLT 90.0% and NMT 110.0% each of the labeled amount of olanzapine ($C_{17}H_{20}N_4S$) and fluoxetine ($C_{17}H_{18}F_3NO$).

IDENTIFICATION

• **A.** The retention times of the major peaks of the *Sample solution* correspond to those of the *Standard solution*, as obtained in the Assay.

Add the following:

▲ **B.** The UV spectra of the major peaks of the *Sample solution* correspond to those of the *Standard solution*, as obtained in the Assay. ▲ (USP 1-Aug-2019)

ASSAY

Change to read:

PROCEDURE

Buffer: 37 mg/L of [disodium ethylenediaminetetraacetate](#) in [water](#). Add 3.3 mL of [phosphoric acid](#), and adjust with 50% [sodium hydroxide](#) to a pH of 2.5. Dissolve 8.7 g of [sodium dodecyl sulfate](#) in the resulting solution.

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

Standard solution: 0.12 mg/mL of [USP Olanzapine RS](#) and 0.45 mg/mL of [USP Fluoxetine Hydrochloride RS](#) in *Mobile phase*

Sample solution: Nominally 0.06–0.18 mg/mL of olanzapine and 0.25–0.5 mg/mL of fluoxetine in *Mobile phase* from a counted number of Capsules prepared as follows. Place the Capsules (including shells) into a suitable volumetric flask and fill to about half volume with *Mobile phase*. Mix for NLT 30 min. If disintegration is incomplete, sonicate for NMT 5 min. Dilute with *Mobile phase* to volume, mix, and filter or centrifuge.

Chromatographic system

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

Mode: LC

Detector: UV 227 nm. ▲For *Identification B*, use a diode array detector in the range of 210–400 nm. ▲ (USP 1-Aug-2019)

Column: 4.6-mm × 7.5-cm; 3.5-μm packing [L7](#)

Column temperature: 40°

Flow rate: 2 mL/min

Injection volume: 10 μL

Run time: 2.5 times the retention time of olanzapine

System suitability

Sample: *Standard solution*

[NOTE—The relative retention times for olanzapine and fluoxetine are 1.0 and 1.5, respectively.]

Suitability requirements

Resolution: NLT 2.0 between olanzapine and fluoxetine

Relative standard deviation: NMT 2.0% for the olanzapine and fluoxetine peaks

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 Capsules taken:

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

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

r_s = peak response of olanzapine 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)

Calculate the percentage of the labeled amount of fluoxetine ($C_{17}H_{18}F_3NO$) in the portion of Capsules taken:

$$\text{Result} = (r_u/r_s) \times (C_s/C_u) \times (M_{r1}/M_{r2}) \times 100$$

r_u = peak response of fluoxetine from the *Sample solution*

r_s = peak response of fluoxetine from the *Standard solution*

C_s = concentration of [USP Fluoxetine Hydrochloride RS](#) in the *Standard solution* (mg/mL)

C_u = nominal concentration of fluoxetine in the *Sample solution* (mg/mL)

M_{r1} = molecular weight of fluoxetine, 309.33

M_{r2} = molecular weight of fluoxetine hydrochloride, 345.79

Acceptance criteria: 90.0%–110.0% ▲each of olanzapine and fluoxetine▲ (USP 1-Aug-2019)

PERFORMANCE TESTS

• [DISSOLUTION \(711\)](#)

Medium: 0.1 N [hydrochloric acid](#); 900 mL, deaerated. [NOTE—Helium sparging recommended.]

Apparatus 2: 50 rpm, with 3-prong sinkers

Time: 30 min for both olanzapine and fluoxetine

Standard solution: [USP Olanzapine RS](#) and [USP Fluoxetine Hydrochloride RS](#) in *Medium* to obtain a final concentration of ($L/1000$) mg/mL each, where L is label claim, in mg/Capsule.

Sample solution: Pass a portion of the solution through a suitable filter of 0.45- μ m pore size.

Buffer, Mobile phase, Chromatographic system, System suitability, and Analysis: Proceed as directed in the Assay.

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

$$\text{Result} = (r_u/r_s) \times (C_s/L) \times V \times 100$$

r_u = peak response of olanzapine from the *Sample solution*

r_s = peak response of olanzapine from the *Standard solution*

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

L = label claim for olanzapine (mg/Capsule)

V = volume of *Medium*, 900 mL

Calculate the percentage of the labeled amount of fluoxetine ($C_{17}H_{18}F_3NO$) dissolved:

$$\text{Result} = (r_u/r_s) \times (C_s/L) \times (M_{r1}/M_{r2}) \times V \times 100$$

r_u = peak response of fluoxetine from the *Sample solution*

r_s = peak response of fluoxetine from the *Standard solution*

C_s = concentration of [USP Fluoxetine Hydrochloride RS](#) in the *Standard solution* (mg/mL)

L = label claim for fluoxetine (mg/Capsule)

M_{r1} = molecular weight of fluoxetine, 309.33

M_{r2} = molecular weight of fluoxetine hydrochloride, 345.79