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Add the following:

^Fenofibric Acid Delayed-Release Capsules

DEFINITION

Fenofibric Acid Delayed-Release Capsules contain an amount of Choline Fenofibrate equivalent to NLT 90.0% and NMT 110.0% of the labeled amount of fenofibric acid ($C_{17}H_{15}ClO_4$).

IDENTIFICATION

- **A. SPECTROSCOPIC IDENTIFICATION TESTS (197), Infrared Spectroscopy:** 197A or 197K

Sample: Grind the contents of one Capsule, excluding the gelatin shell, to a fine powder. Use an appropriate amount of sample.

Acceptance criteria: The IR absorption spectrum of the *Sample* exhibits maxima at about 1700–1200 and 950–650 cm^{-1} wavenumbers, typical for choline fenofibrate.

- **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

• PROCEDURE

Protect all solutions containing fenofibric acid from light.

Solution A: [Water](#) adjusted with [phosphoric acid](#) to a pH of 2.5

Mobile phase: [Acetonitrile](#) and *Solution A* (55:45)

Diluent: [Methanol](#) and [water](#) (50:50)

Standard solution: Equivalent to 0.25 mg/mL of fenofibric acid from [USP Choline Fenofibrate RS](#) in *Diluent*

Sample stock solution: Nominally equivalent to 1 mg/mL of fenofibric acid from Capsules prepared as follows. Empty, weigh, and mix the contents of Capsules (NLT 20) and transfer a suitable amount of the mixture to a suitable volumetric flask. Add 50% of the flask volume of [methanol](#) and sonicate for about 15 min. Add an additional 40% of the flask volume of [water](#) and stir for about 30 min. Cool to room temperature and dilute with [water](#) to volume. Centrifuge a portion and use the clear supernatant.

Sample solution: Nominally equivalent to 0.25 mg/mL of fenofibric acid in *Diluent* from the *Sample stock solution*

Chromatographic system

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

Mode: LC

Detector: UV 286 nm

Column: 4.6-mm × 25-cm; 5- μ m [L1](#) packing

Flow rate: 1 mL/min

Injection volume: 10 μ L

Run time: NLT 1.3 times the retention time of the fenofibric acid

System suitability

Sample: *Standard solution*

Suitability requirements

Tailing factor: NMT 1.7

Relative standard deviation: NMT 1.0%

Analysis

Samples: *Standard solution* and *Sample solution*

Calculate the percentage of the labeled amount of fenofibric acid ($C_{17}H_{15}ClO_4$) 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 fenofibric acid from the *Sample solution*

r_s = peak response of fenofibric acid from the *Standard solution*

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

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

M_{r1} = molecular weight of fenofibric acid, 318.75

M_{r2} = molecular weight of choline fenofibrate, 421.91

Acceptance criteria: 90.0%–110.0%

PERFORMANCE TESTS

• [DISSOLUTION \(711\)](#)

Test 1

Protect all solutions containing fenofibric acid from light.

Acid stage medium: 0.05 M [monobasic sodium phosphate](#), pH 3.5 prepared as follows. Dissolve 6.9 g of [monobasic sodium phosphate](#) in 1 L of [water](#). Adjust with 0.05 M [phosphoric acid](#) to a pH of 3.5; 510 mL.

Buffer concentrate: 0.05 M sodium phosphate, pH 11.5 prepared as follows. Dissolve 6.9 g of [monobasic sodium phosphate](#) and 2.4 g of [sodium hydroxide](#) in 1 L of [water](#).

Buffer stage medium: 0.05 M sodium phosphate buffer, pH 6.8 (add 400 mL of *Buffer concentrate* over a period of time not exceeding 5 min, to the vessel containing the *Acid stage medium*); 900 mL

Apparatus 2: 50 rpm

Times

Acid stage: 2 h

Buffer stage: 2.5, 3.5, and 6 h

Acidified water: 0.3% [perchloric acid](#) in [water](#)

Mobile phase: [Acetonitrile](#) and *Acidified water* (65:35)

Standard stock solution: 0.9 mg/mL of [USP Fenofibric Acid RS](#) prepared as follows. Weigh a known amount of [USP Fenofibric Acid RS](#) into a suitable volumetric flask. Dissolve in 10% of the total volume of [acetonitrile](#), mix, and sonicate for about 30 min. Dilute with *Buffer stage medium* to volume.

Standard solutions: Prepare *Standard solutions* in *Buffer stage medium* as described in [Table 1](#), from the *Standard stock solution*.

Table 1

Standard Solutions for 135-mg Capsules	Concentration (mg/mL)
I	0.01
II	0.05
III	0.13
IV	0.15
V	0.2

Standard Solutions for 45-mg Capsules	Concentration (mg/mL)
I	0.005
II	0.01
III	0.03
IV	0.045



Standard Solutions for 45-mg Capsules	Concentration (mg/mL)
V	0.06

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

Chromatographic system

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

Mode: LC

Detector: UV 286 nm

Column: 4.6-mm × 15-cm; 5-μm packing [L1](#)

Column temperature: 35°

Flow rate: 1.5 mL/min

Injection volume: 10 μL

Run time: NLT 1.5 times the retention time of fenofibric acid

System suitability

Samples: *Standard solution I, Standard solution II, Standard solution III, Standard solution IV, and Standard solution V*

Suitability requirements

Correlation coefficient: NLT 0.9990 for fenofibric acid of the standard curve from the linear regression in the *Analysis*

Tailing factor: NMT 2.0, *Standard solution V*

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

Analysis

Samples: *Standard solution I, Standard solution II, Standard solution III, Standard solution IV, Standard solution V, and Sample solution*

Acid stage: At the 2-h time point, remove a 10-mL aliquot from each vessel. Dilute the aliquot with *Buffer concentrate* at a 5:4 ratio.

Buffer stage: At the specified sampling times for the *Buffer stage*, remove a 10-mL aliquot from each vessel and filter.

Using linear regression analysis, generate a standard curve for the fenofibric acid peak responses versus concentrations of *Standard solution I, Standard solution II, Standard solution III, Standard solution IV, and Standard solution V*. Determine the concentration (C_i), in mg/mL, of the fenofibric acid in the *Sample solution* using the standard curve.

Calculate the percentage of the labeled amount of fenofibric acid ($C_{17}H_{15}ClO_4$) dissolved in the acid stage:

$$\text{Result}_1 = C_1 \times V \times D \times (1/L) \times 100$$

C_1 = concentration of fenofibric acid in the *Acid stage* (mg/mL)

V = volume of *Acid stage medium*, 510 mL

D = dilution factor

L = label claim (mg/Capsule)

Calculate the percentage of the labeled amount of fenofibric acid ($C_{17}H_{15}ClO_4$) dissolved in the buffer stage at each time point (i):

$$\text{Result}_2 = \{[C_2 \times (V - V_s)] + (C_1 \times V_s)\} \times (1/L) \times 100$$

$$\text{Result}_3 = \{C_3 \times [V - (2 \times V_s)]\} + [(C_2 + C_1) \times V_s] \times (1/L) \times 100$$

$$\text{Result}_4 = \{C_4 \times [V - (3 \times V_s)]\} + [(C_3 + C_2 + C_1) \times V_s] \times (1/L) \times 100$$

C_i = concentration of fenofibric acid in the *Sample solution* (from the Standard curve) at the specified time point (i) (mg/mL)

V = volume of *Buffer stage medium*, 900 mL

V_s = volume of the *Sample solution* withdrawn at each time point in the *Buffer stage* (mL)

L = label claim (mg/Capsule)

Tolerances: See [Table 2](#).

Table 2