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Fenoprofen Calcium

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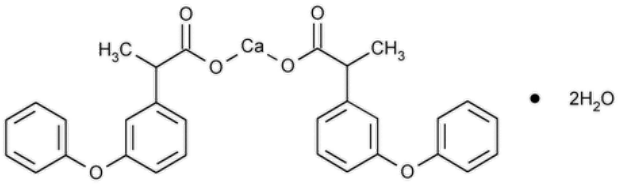

$C_{30}H_{26}CaO_6 \cdot 2H_2O$ 558.63

Benzeneacetic acid, α-methyl-3-phenoxy-, calcium salt dihydrate, (±)-.

Calcium (±)-*m*-phenoxyhydratropate dihydrate CAS RN®: ▲71720-56-4▲ (ERR 1-Dec-2020) ; UNII: 0X2CW1QABJ.

Anhydrous 522.61 CAS RN®: 34597-40-5; UNII: 8R95A3O51K.

» Fenoprofen Calcium contains not less than 97.0 percent and not more than 103.0 percent of $(C_{15}H_{13}O_3)_2Ca$, calculated on the anhydrous basis.

Packaging and storage—Preserve in tight containers.

USP Reference standards ⟨11⟩—

USP Fenoprofen Calcium RS

Identification—

A: *Spectroscopic Identification Tests* ⟨197⟩, *Infrared Spectroscopy: 197K*.

B: Heat a 1 in 50 mixture of it with acetic acid, filter, and add 2 mL of ammonium oxalate TS to the filtrate: a white precipitate, which is soluble in 3 N hydrochloric acid, is formed.

Water Determination, *Method I* ⟨921⟩: between 5.0% and 8.0%.

Chromatographic purity—

Solution A—Prepare a filtered and degassed mixture of water and acetic acid (98:2).

Solution B—Prepare a filtered and degassed mixture of acetonitrile and acetic acid (98:2).

Mobile phase—Use variable mixtures of *Solution A* and *Solution B* as directed for *Chromatographic system*. Make adjustments if necessary (see *System Suitability* under *Chromatography* ⟨621⟩).

Diluent: a mixture of water and acetonitrile (1:1).

System suitability solution—Dissolve accurately weighed quantities of 3-phenoxybenzoic acid and USP Fenoprofen Calcium RS in *Diluent* to obtain a solution containing about 0.02 mg of each per mL.

Standard solution—Dissolve an accurately weighed quantity of USP Fenoprofen Calcium RS in *Diluent* to obtain a solution having a known concentration of about 0.02 mg per mL.

Test solution—Transfer about 200 mg of Fenoprofen Calcium, accurately weighed, to a 100-mL volumetric flask, dissolve in and dilute with *Diluent* to volume, and mix.

Chromatographic system (see *Chromatography* ⟨621⟩)—The liquid chromatograph is equipped with a 270-nm detector and a suitable 4.6-mm × 25-cm column[1] that contains 5-µm packing L7. The flow rate is 1.5 mL per minute. The chromatograph is programmed as follows.

Time (minutes)	*Solution A* (%)	*Solution B* (%)	Elution
0	70	30	equilibration
0–3	70	30	isocratic
3–41	70→10	30→90	linear gradient
41–42	10	90	isocratic
42–43	10→70	90→30	linear gradient

Time (minutes)	*Solution A* (%)	*Solution B* (%)	Elution
43–55	70	30	re-equilibration

Chromatograph the *System suitability solution*, and record the peak responses as directed for *Procedure:* the relative retention times are about 0.89 for 3-phenoxybenzoic acid and 1.0 for fenoprofen; the resolution, *R,* between 3-phenoxybenzoic acid and fenoprofen is not less than 9.0; and the tailing factor for the fenoprofen peak is not more than 2.0. Chromatograph the *Standard solution*, and record the peak responses as directed for *Procedure:* the tailing factor for the fenoprofen peak is not more than 2.0; and the relative standard deviation for replicate injections is not more than 2.0%.

Procedure—Separately inject equal volumes (about 20 µL) of the *Standard solution* and the *Test solution* into the chromatograph, record the chromatograms, and measure the peak responses. Calculate the percentage of each impurity in the portion of Fenoprofen Calcium taken by the formula:

$$10{,}000(C/W)(r_i/r_S)$$

in which C is the concentration, in mg per mL, of USP Fenoprofen Calcium RS in the *Standard solution; W* is the quantity, in mg, of Fenoprofen Calcium taken to prepare the *Test solution;* r_i is the response for each impurity peak obtained from the *Test solution;* and r_S is the response of the fenoprofen peak obtained from the *Standard solution:* not more than 0.5% of any individual impurity is found; and not more than 2.0% of total impurities is found.

Content of calcium—

Test solution—Transfer about 750 mg of Fenoprofen Calcium, accurately weighed, to a 50-mL volumetric flask, dissolve in alcohol with the aid of heat, if necessary, cool, dilute with alcohol to volume, and mix.

Procedure—In a 150-mL beaker, mix 70 mL of water, 2 mL of sodium hydroxide solution (1 in 10), and about 0.3 g of hydroxy naphthol blue. Add about 1 mL of the *Test solution*, and titrate to the blue endpoint with 0.05 M edetate disodium. Transfer 10.0 mL of the *Test solution* to the solution so obtained, and titrate to the blue endpoint with 0.05 M edetate disodium VS. Each mL of 0.05 M edetate disodium is equivalent to 2.004 mg of Ca: not less than 7.3% and not more than 8.0% of Ca, calculated on the anhydrous basis, is found.

Assay—

Mobile phase—Prepare a suitable degassed mixture of acetonitrile, water, and phosphoric acid (50:49.6:0.4). Make adjustments if necessary (see *System Suitability* under *Chromatography* ⟨621⟩).

Diluting solution—Prepare a mixture of methanol and water (700:300).

Resolution solution—Prepare a solution in *Diluting solution* containing about 1 mg of Fenoprofen Calcium and 1 mg of gemfibrozil per mL.

Standard preparation—Transfer about 70 mg of USP Fenoprofen Calcium RS, accurately weighed, to a 100-mL volumetric flask, add 0.5 mL of 0.5 N hydrochloric acid and 2 mL of acetone, and dissolve by shaking. Dilute with *Diluting solution* to volume, and mix.

Assay preparation—Transfer about 70 mg of Fenoprofen Calcium, accurately weighed, to a 100-mL volumetric flask, add 0.5 mL of 0.5 N hydrochloric acid and 2 mL of acetone, and dissolve by shaking. Dilute with *Diluting solution* to volume, and mix.

Chromatographic system (see *Chromatography* ⟨621⟩)—The liquid chromatograph is equipped with a 272-nm detector and a 4.6-mm × 15-cm column that contains 5-µm packing L7. The flow rate is about 2 mL per minute. Chromatograph the *Resolution solution*, and record the peak responses as directed for *Procedure:* the relative retention times are about 0.5 for fenoprofen and 1.0 for gemfibrozil; the tailing factor for the fenoprofen peak is not more than 2; and the resolution, *R,* between the fenoprofen peak and the gemfibrozil peak is not less than 8. Chromatograph the *Standard preparation,* and record the peak responses as directed for *Procedure:* the column efficiency determined from the fenoprofen peak is not less than 3000 theoretical plates; and the relative standard deviation for replicate injections is not more than 2.0%.

Procedure—Separately inject equal volumes (about 20 µL) of the *Standard preparation* and the *Assay preparation* into the chromatograph, record the chromatograms, and measure the responses for the major peaks. Calculate the quantity, in mg, of $(C_{15}H_{13}O_3)_2Ca$ in the portion of Fenoprofen Calcium taken by the formula:

$$100C(r_U/r_S)$$

in which C is the concentration, in mg per mL, of anhydrous fenoprofen calcium in the *Standard preparation,* as determined from the concentration of USP Fenoprofen Calcium RS, corrected for moisture content by a titrimetric water determination; and r_U and r_S are the fenoprofen peak responses obtained from the *Assay preparation* and the *Standard preparation,* respectively.

[1] One suitable column brand is the Zorbax Eclipse XDB-C8.

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

Topic/Question	Contact	Expert Committee
FENOPROFEN CALCIUM	Documentary Standards Support	SM22020 Small Molecules 2

Chromatographic Database Information: Chromatographic Database

Most Recently Appeared In:
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