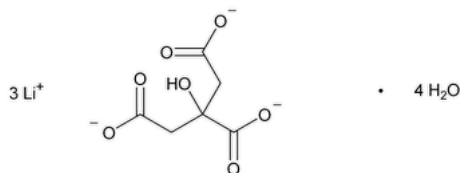


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Lithium Citrate

Change to read:



$C_6H_5Li_3O_7 \cdot 4H_2O$ 281.98

$C_6H_5Li_3O_7$ ▲209.92▲ (USP 1-Dec-2024)

1,2,3-Propanetricarboxylic acid, 2-hydroxy-trilithium salt tetrahydrate;

Trilithium citrate tetrahydrate CAS RN®: 6080-58-6; UNII: 5Z6E9K79YV.

Anhydrous CAS RN®: 919-16-4; UNII: 3655633623.

DEFINITION

Lithium Citrate contains NLT 98.0% and NMT 102.0% of lithium citrate ($C_6H_5Li_3O_7$), calculated on the anhydrous basis.

IDENTIFICATION

- **A.** The emission intensity at 671 nm of the *Sample solution* corresponds to that of the *Standard solution*, as obtained in the Assay.
- **B.** [IDENTIFICATION TESTS—GENERAL \(191\)](#), [Chemical Identification Tests, Citrate](#): Meets the requirement

ASSAY

Change to read:

• PROCEDURE

▲**Solution A:**▲ (USP 1-Dec-2024) 1%–2% solution of nonionic surfactant such as [1-dodecyl mercaptan ethoxylate](#) or [polyoxyethylene \(20\) sorbitan monolaurate](#) in [water](#)

Blank: ▲*Solution A*▲ (USP 1-Dec-2024) and [water](#) (1:50)

Standard stock solution: 0.3 mg/mL of [USP Lithium Carbonate RS](#) prepared as follows. Transfer ▲an appropriate amount▲ (USP 1-Dec-2024) of [USP Lithium Carbonate RS](#) to a suitable volumetric flask, add 20% of the flask volume of [water](#) and 0.5% of the flask volume of [hydrochloric acid](#). Shake until dissolved, and dilute with [water](#) to volume.

Standard solution: 0.006 mg/mL of [USP Lithium Carbonate RS](#) from *Standard stock solution* prepared as follows. ▲Transfer▲ (USP 1-Dec-2024) a suitable volume of *Standard stock solution* to a suitable volumetric flask. Add 80% of the flask volume of [water](#) and 2% of the flask volume of ▲*Solution A*,▲ (USP 1-Dec-2024) and dilute with [water](#) to volume.

Sample stock solution: 0.8 mg/mL of Lithium Citrate prepared as follows. Transfer a suitable amount of Lithium Citrate to a suitable volumetric flask. Dissolve in [water](#). Add 0.05% of the flask volume of [hydrochloric acid](#). Dilute with [water](#) to volume.

Sample solution: ▲▲ (USP 1-Dec-2024) 0.006 mg/mL of Lithium Citrate from *Sample stock solution* prepared as follows. ▲Transfer▲ (USP 1-Dec-2024) a suitable volume of *Sample stock solution* to a suitable volumetric flask. Add 80% of the flask volume of [water](#) and 2% of the flask volume of ▲*Solution A*,▲ (USP 1-Dec-2024) and dilute with [water](#) to volume.

Instrumental conditions

Mode: Flame photometry

Analytical wavelength: 671 nm

Analysis

Samples: *Blank*, *Standard solution*, and *Sample solution*

Use the *Blank* to zero the instrument. Measure the emission responses for the *Standard solution* and the *Sample solution*.

Calculate the percentage of lithium citrate ($C_6H_5Li_3O_7$) in the portion of Lithium Citrate taken:

$$\text{Result} = (r_U/r_S) \times (C_S/C_U) \times (M_{r1}/M_{r2}) \times F \times 100$$

r_U = emission response of the *Sample solution*

- r_s = emission response of the *Standard solution*
- C_s = concentration of [USP Lithium Carbonate RS](#) in the *Standard solution* (mg/mL)
- C_u = concentration of Lithium Citrate in the *Sample solution* (mg/mL)
- M_{r1} = molecular weight of anhydrous lithium citrate, $\blacktriangle 209.92 \blacktriangle$ (USP 1-Dec-2024)
- M_{r2} = molecular weight of lithium carbonate, 73.89
- F = ratio of the number of moles of lithium in 1 mol of lithium carbonate to that of the number of moles of lithium in 1 mol of lithium citrate, 0.66

Acceptance criteria: 98.0%–102.0% on the anhydrous basis

SPECIFIC TESTS

Change to read:

• **CARBONATE**

Analysis: Add 0.5 g of Lithium Citrate to 5 mL of $\blacktriangle$ [acetic acid](#) $\blacktriangle$ (USP 1-Dec-2024)

Acceptance criteria: NMT a slight effervescence is produced.

• **pH (791)**

Sample solution: 50-mg/mL solution of Lithium Citrate in [water](#)

Acceptance criteria: 7.0–10.0

Change to read:

• **WATER DETERMINATION (921), $\blacktriangle$ Method I, Method Ia** $\blacktriangle$ (USP 1-Dec-2024)

Acceptance criteria: 24.0%–28.0%

ADDITIONAL REQUIREMENTS

• **PACKAGING AND STORAGE:** Preserve in tight containers.

• **USP REFERENCE STANDARDS (11).**

[USP Lithium Carbonate RS](#)

Auxiliary Information - Please [check for your question in the FAQs](#) before contacting USP.

Topic/Question	Contact	Expert Committee
LITHIUM CITRATE	Documentary Standards Support	SM42020 Small Molecules 4

Chromatographic Database Information: [Chromatographic Database](#)

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