**PrymaLab**
PRYMALAB ANALYTICAL · IN-HOUSE LABORATORY
3705 Music Branch Rd, Ashland, KY 41102 · +1 (606) 465-9063 · prymalab.net

CERTIFICATE NO.
**PL-26-00232**
VERIFICATION KEY
**X4FJHBG4**
Scan or enter both at prymalab.net/testing/verify

CERTIFICATE OF ANALYSIS · LOT RELEASE

# L-Carnitine 500 mg

Lot **PL-2610-118** · Lyophilized powder · Label claim **500 mg per vial**

**TESTED IN-HOUSE BY PRYMALAB**
In-house analytical result, not an independent third-party test

| LOT / BATCH NUMBER | DATE MADE | DATE OF ANALYSIS | DATE ISSUED |
|---|---|---|---|
| PL-2610-118 | 2026-10-05 | 2026-10-06 | 2026-10-20 |
| **RETEST / EXPIRY** | **UNITS IN LOT / SAMPLED** | **STORAGE** | **CERTIFICATE TYPE** |
| 2028-10-05 | 341 / 2 | 15–25 °C, tightly closed, dry | Lot COA, 2 pages |

| COMPOUND | CAS NUMBER | MOLECULAR FORMULA | THEORETICAL MASS (AVG.) |
|---|---|---|---|
| **L-Carnitine**<br>Levocarnitine (inner salt); small molecule, not a peptide | 541-15-1 | $C_7H_{15}NO_3$ | 161.20 Da |

STRUCTURE

PURITY · RP-HPLC, AREA %
**99.50%**
Specification ≥ 99.0 % • main peak at 4.65 min

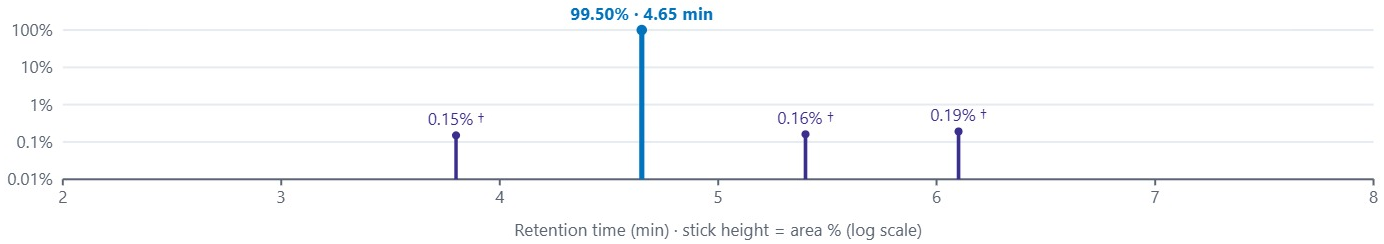
IDENTITY · OBSERVED MASS
**161.21 Da**
Theoretical 161.20 Da • +0.01 Da (62 ppm)

OVERALL CONCLUSION
**PASS**
Meets every specification for the tests performed

| TEST | METHOD | SPECIFICATION | RESULT | CONCLUSION |
|---|---|---|---|---|
| **Identity (mass)** | LC-MS, ESI positive | Theoretical ± 1.0 Da | 161.21 Da | PASS |
| **Purity** | RP-HPLC, UV 254–306 nm, area % | ≥ 99.0 % | 99.50 % | PASS |
| **Largest impurity** | RP-HPLC, area % | ≤ 1.0% | 0.19% (RT 6.10) | PASS |
| **Water content** | Karl Fischer | ≤ 5.0 % | 0.97 % | PASS |
| **Bacterial endotoxin** | LAL, kinetic | ≤ 5.0 EU/mg | 0.055 EU/mg | PASS |
| **Sterility** | USP <71>, 14-day | No growth | No growth | PASS |

## 1 HPLC CHROMATOGRAM

**Data file:** PL-2610-118-HPLC.raw · Column C18, 150 × 4.6 mm · UV 254–306 nm




Peak plot drawn from the integrated peak table (area %, log scale); it is not the instrument trace, which is retained in PL-2610-118-HPLC.raw. † Nominal reference retention time for the assigned impurity; the main-peak RT is observed in this lot.


**For laboratory research use only.** Not for human or veterinary use.

## 2 HPLC METHOD · PL-2610-118-HPLC.RAW

**INSTRUMENT**
Waters Alliance e2695

**DATA SYSTEM**
Empower 3

**DETECTOR**
UV absorbance

**DETECTION WAVELENGTH**
254–306 nm

**COLUMN**
C18, 150 × 4.6 mm, 3.5 µm

**MOBILE PHASE A**
0.1 % TFA in water

**MOBILE PHASE B**
0.1 % TFA in MeCN

**GRADIENT**
5–95 % B over 25 min (linear)

**FLOW RATE**
1.0 mL/min

**COLUMN TEMPERATURE**
40 °C

**INJECTION VOLUME**
10 µL

## 3 GRADIENT PROGRAM

| TIME (MIN) | % A | % B |
|---|---|---|
| 0.0 | 95 | 5 |
| 25.0 | 5 | 95 |

## 4 PEAK TABLE

| PEAK | RT (MIN) | AREA | AREA % |
|---|---|---|---|
| 1 | 3.80 † | — | 0.15 |
| **2** | **4.65** | **—** | **99.50** |
| 3 | 5.40 † | — | 0.16 |
| 4 | 6.10 † | — | 0.19 |
| Total | | — | 100.00 |

Peaks: 1 unidentified impurity; 2 main peak (L-Carnitine); 3 unidentified impurity; 4 unidentified impurity · Area % from the integrated peak table (absolute areas are not part of the lot-release export) · † nominal reference RT for the assigned impurity · Purity = main peak area ÷ total integrated area × 100, to two decimals; main peak shaded.

## 5 IDENTITY BY MASS SPECTROMETRY

**INSTRUMENT**
Waters SQD

**IONIZATION / MODE**
ESI, positive

**REFERENCE M/Z (ION)**
162.12 [M+H]+

**DECONVOLUTED MASS**
161.21 Da

**THEORETICAL MASS**
161.20 Da

**DIFFERENCE**
+0.01 Da (62 ppm)

**DATA FILE**
PL-2610-118-MS.d

**ACCEPTANCE**
Within ± 1.0 Da

## 6 ADDITIONAL TESTS

| TEST | PERFORMED BY | DATE | REPORT / FILE |
|---|---|---|---|
| Water content (Karl Fischer) | PrymaLab Analytical | 2026-10-06 | — |
| Endotoxin (LAL, kinetic) | PrymaLab Analytical | 2026-10-06 | — |
| Sterility (USP <71>, day-14 read-out) | PrymaLab Analytical | 2026-10-20 | — |

A test with no row here was not performed on this lot. Outside-laboratory reports, when used, are attached and named below.

## 7 REVIEW AND APPROVAL

**D. Reynolds**
Analyst · performed the testing
Date: 2026-10-20

**S. Calloway**
Reviewer · checked against raw data
Date: 2026-10-20

**M. Phelps**
Lab Director · approved for release
Date: 2026-10-20

Raw data retained at: Empower 3, project PL-2610, archive PL-ARC-2026; 7 years. Outside laboratory reports attached: None

This certificate applies only to the lot named above and describes the units sampled from it; it is not a guarantee for any other lot. Results were obtained by PrymaLab LLC's own laboratory (PrymaLab Analytical) and are not an independent third-party test unless an outside report is attached. Reference values (CAS, formula, theoretical mass, sequence) are literature values for the named compound. Authenticity: scan the QR code or enter certificate number PL-26-00232 and key X4FJHBG4 at prymalab.net/testing/verify; any copy that does not match the record shown there is not a PrymaLab certificate. PrymaLab LLC products are supplied for laboratory research use only and not for human or veterinary use.