



CERTIFICATE NO.
PL-26-00044

VERIFICATION KEY
3FW32FFP

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CERTIFICATE OF ANALYSIS · LOT RELEASE · ISSUED FOR VIRSTELLIS

Glutathione 1,500 mg

TESTED IN-HOUSE BY PRYMALAB

Lot PL-2609-044 · Lyophilized powder · Label claim 1500 mg/vial · Distributed as Glutathione

In-house analytical result,
not an independent third-party test

LOT / BATCH NUMBER PL-2609-044	DATE MADE 2026-09-18	DATE OF ANALYSIS 2026-09-19	DATE ISSUED 2026-10-03
RETEST / EXPIRY 2028-09-18	UNITS IN LOT / SAMPLED 250 / 2	STORAGE -20 °C, desiccated, dark, protected from air	CERTIFICATE TYPE Lot COA, 2 pages

COMPOUND Glutathione (reduced) GSH; γ-L-glutamyl-L-cysteinyl-glycine	CAS NUMBER 70-18-8	MOLECULAR FORMULA C₁₀H₁₇N₃O₆S	THEORETICAL MASS (AVG.) 307.3 Da
SEQUENCE H-γGlu-Cys-Gly-OH (γ-glutamyl linkage; free thiol; free N- and C-termini)			

PURITY · RP-HPLC, AREA %

99.12%

Specification 99.0% • main peak at 2.12 min

IDENTITY · OBSERVED MASS

307.5 Da

Theoretical 307.3 Da • +0.2 Da (650 ppm)

OVERALL CONCLUSION

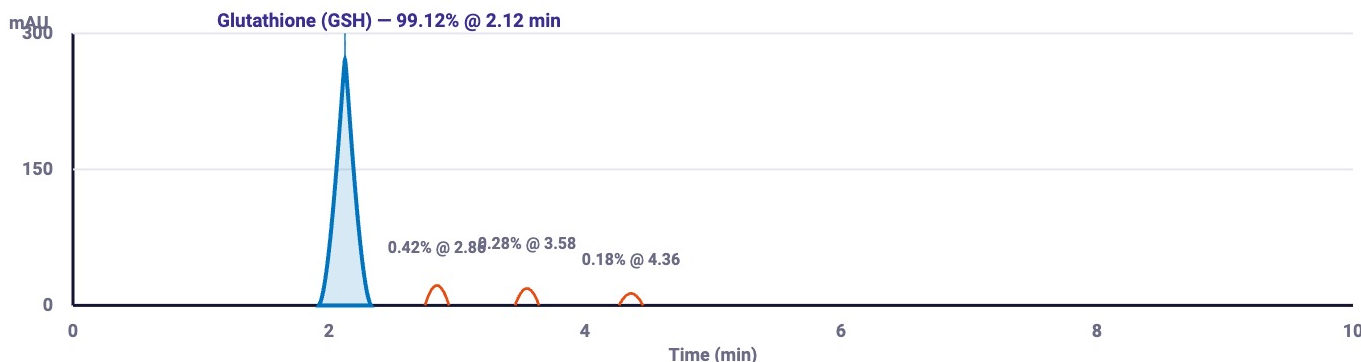
PASS

Meets every specification for the tests performed

TEST	METHOD	SPECIFICATION	RESULT	CONCLUSION
Appearance	Visual inspection	White crystalline powder or lyophilized cake	White lyophilized cake	PASS
Identity (mass)	LC-MS, ESI positive	Theoretical ± 1.0 Da	307.5 Da (reduced free acid)	PASS
Purity	RP-HPLC, UV 214 nm, area%	99.0%	99.12 %	PASS
Largest impurity	RP-HPLC, area%	1.0%	0.42% at 2.86 min (GSSG disulfide dimer)	PASS
Water content	Karl Fischer	5.0 %	1.8%	PASS
Bacterial endotoxin	LAL, kinetic	≤ 5.0 EU/mg	0.03 EU/mg	PASS
Sterility / bioburden	USP <71>, membrane filtration	No growth after 14 days	No growth; conforms	PASS

1 HPLC CHROMATOGRAM

Data file: GSH_PL-2609-044_20260919_01 · Column C18, 150 × 4.6 mm · UV 214 nm



Baseline uncropped; main peak and impurities labeled with retention times. Peak table on page 2.

**2 HPLC METHOD · GSH_PL-2609-044_20260919_01**

INSTRUMENT

Waters Alliance e2695, SN E2695B742

DETECTION WAVELENGTH

214 nm

MOBILE PHASE A

0.1% TFA in water

COLUMN TEMPERATURE

30 °C

SAMPLE DILUENT

Water, 0.1% TFA

REFERENCE STANDARD

In-house GSH reference, lot PL-RS-GSH-01, RT 2.10 min

DATA SYSTEM

Empower 3, Build 3471

COLUMN

C18, 150 × 4.6 mm, 3.5 µm

MOBILE PHASE B

0.1% TFA in MeCN

INJECTION VOLUME

20 µL

SAMPLE CONCENTRATION

0.5 mg/mL

DETECTOR

Waters 2998 PDA

COLUMN PART / SERIAL

186003326 / USHX18211

FLOW RATE

1.0 mL/min

RUN TIME

10 min

BLANK INJECTED

Yes

3 GRADIENT PROGRAM

TIME (MIN)	% A	% B
0.0	95	5
3.0	95	5
7.0	55	45
8.0	20	80
9.0	20	80
10.0	95	5

4 PEAK TABLE

PEAK	RT (MIN)	AREA	AREA %
1	2.12	4,262,160	99.12
2	2.86	18,060	0.42
3	3.58	12,040	0.28
4	4.36	7,740	0.18
Total		4,300,000	100.00

Threshold 0.05% area · Blank subtracted: Y · Purity = main peak area ÷ total integrated area × 100, to two decimals; main peak shaded.

5 IDENTITY BY MASS SPECTROMETRY

INSTRUMENT

Waters Acquity SQD

DECONVOLUTED MASS

307.5 Da

DATA FILE

GSH_PL-2609-044_MS_20260919_01

IONIZATION / MODE

ESI, positive

THEORETICAL MASS

307.3 Da

ACCEPTANCE

Within ± 1.0 Da

OBSERVED M/Z (CHARGE)

308.1 (1+ [M+H]) · 330.1 (1+ [M+Na])

DIFFERENCE

+0.2 Da (650 ppm)

6 ADDITIONAL TESTS

TEST	PERFORMED BY	DATE	REPORT / FILE
Water content	PrymaLab	2026-09-20	RPT-KF-PL-2609-044
Endotoxin	PrymaLab	2026-09-21	RPT-ET-PL-2609-044
Sterility	PrymaLab	2026-10-02	RPT-ST-PL-2609-044

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: 2026-09-19

S. Calloway

Reviewer · checked against raw data

Date: 2026-10-02

M. Phelps

Lab Director · approved for release

Date: 2026-10-03

Raw data retained at: Empower 3 (Build 3471), project PL-2609, 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. This copy is issued for Virstellis, a distributor of the lot; the brand shown does not change the laboratory, the method or the results. Reference values (CAS, formula, theoretical mass, sequence) are literature values for the named compound. Authenticity: scan the QR code or enter certificate number PL-26-00044 and key 3FW32FFP 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.