Gold Standard Analytics

Gold Standard Analytics LLC, Houston, TX

CERTIFICATE OF ANALYSIS

Report GSA-COA-CUST-LA-GSH-20261103-5 · issued Nov 18, 2026

LA Peptides

PRODUCT
Glutathione nasal spray

ORDER
Custom sample

SAMPLE
LA-GSH-20261103

ISSUED
Nov 18, 2026



THE SAMPLE AS RECEIVED

IDENTITY
Glutathione
confirmed by mass

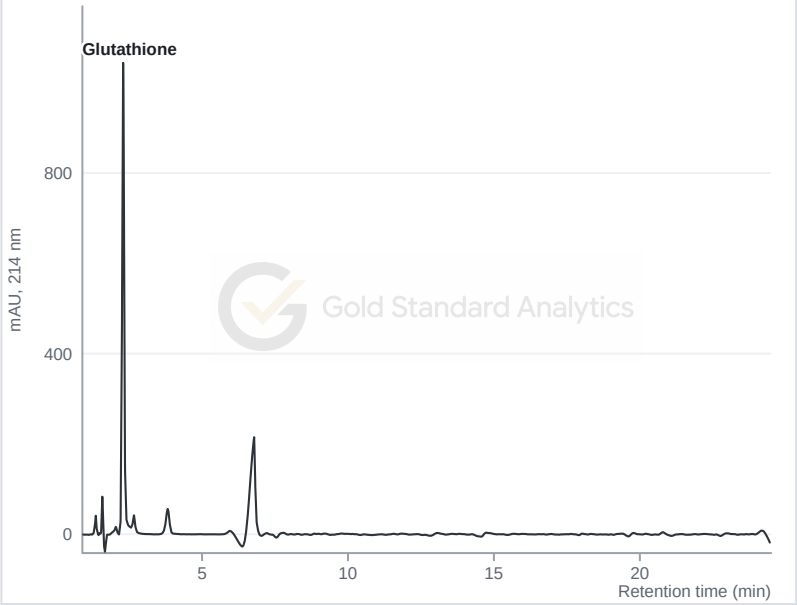
PURITY
90.0 %
HPLC-UV, 214 nm

ENDOTOXINS
< 0.050 EU/mL
Pass; spike recovery 77 %

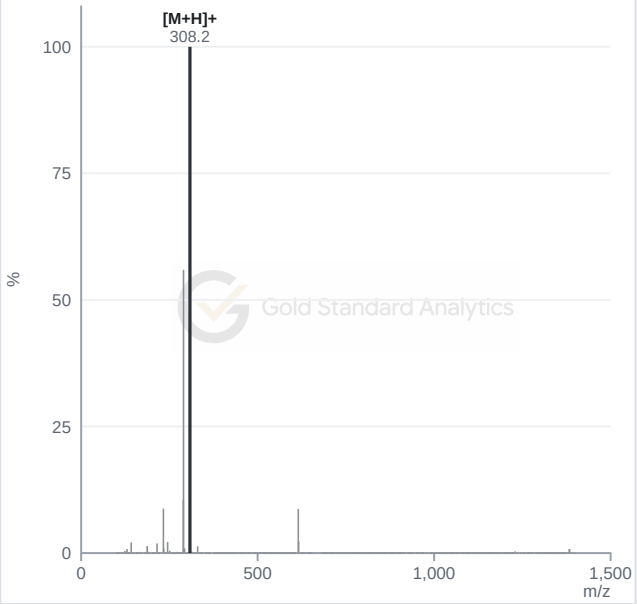
STERILITY
No growth
Pass; both canisters, 14 days

Heavy metals USP <232>, ICP-MS: Pb, Cd, Hg, As, Co, V, Ni — **Pass**

HPLC CHROMATOGRAM — UV, 214 nm



MASS SPECTRUM — main peak (2.30 min)



RELEASED BY

Ian Ebert
Laboratory Director · Nov 19, 2026

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The sample

Custom sample · LA Peptides

Customer	**LA Peptides**	Prepared	**Spray diluted 1 in 7 with water containing 0.1 % formic acid, 3 Nov 2026**
Order	**Custom sample**	Tested	**03 Nov 2026**
Sample	**LA-GSH-20261103**	Tests	**Identity, Purity, Impurity breakdown, Bacterial endotoxins, Sterility, Elemental impurities**
Label	**Glutathione nasal spray, 500 mg per bottle**		

Graphs

HPLC CHROMATOGRAM — HPLC chromatogram (UV, 214 nm) · mAU, 214 nm against Retention time (min)



MASS SPECTRUM — Mass spectrum of the main peak (2.30 min) · Counts against m/z

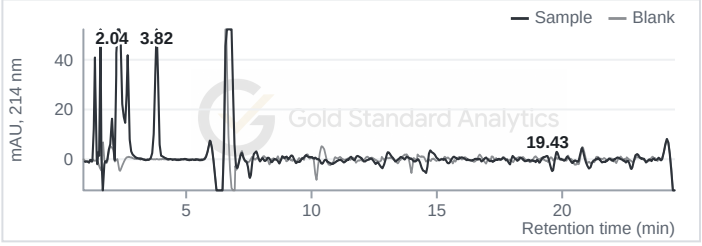


Results

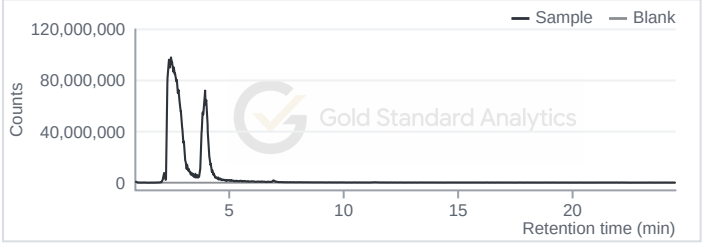
Identity	**Consistent with glutathione.** The main peak at 2.30 min carries its ion at m/z 308.2 ([M+H]+, expected 308.1).
Purity	**90.0 %** by HPLC with UV detection at 214 nm (share of the glutathione-related UV peak area). The main impurity is oxidised glutathione (GSSG), 7.8 %. 4 glutathione-related forms identified by mass are listed below. The small peak at about 6.5 to 7 min comes from the instrument, not the sample (it appears when only blank solvent is run), and is not counted.
Bacterial endotoxins	**< 0.050 EU/mL; spike recovery 77%** . Pass.
Sterility	**No growth in either canister after 14 days** . Pass.
Elemental impurities (USP <232>)	**Pb < 0.5 µg/g; Cd < 0.2 µg/g; Hg < 0.3 µg/g; As < 0.2 µg/g; Co < 0.3 µg/g; V < 0.1 µg/g; Ni < 0.5 µg/g (Agilent ICP-MS)** . Pass.

Zoomed views

HPLC, SMALL PEAKS — Zoomed in on the small peaks (5 % of the main peak) · mAU, 214 nm against Retention time (min)



ION TRACE — Ion trace, m/z 308.1 ([M+H]+): sample vs blank · Counts against Retention time (min)



Impurities

Every peak counted besides the main peptide:

PEAK (MIN)	AMOUNT	WHAT IT IS
2.04	0.76 %	A mixed disulfide of glutathione with cysteinyl-glycine (mass about 483.5), a breakdown product of glutathione.
2.67	1.2 %	A separate form of glutathione with the same mass (an isomer); its exact structure is unknown.
3.82	7.8 %	Oxidised glutathione (GSSG): two glutathione molecules joined through a disulfide bond (mass 612.6). The usual product of glutathione oxidation.
19.43	0.22 %	Glutathione that has lost one water molecule (mass about 289 instead of 307). A common by-product of peptide synthesis or storage.

> Amounts are each peak's share of the peptide-related UV peak area at 214 nm.

How it was tested

Liquid chromatography with UV and mass-spectrometry detection: Agilent 1290 Infinity II LC with a 6490 triple-quadrupole mass spectrometer. Column Polaris C18-A, 2.0 x 150 mm, 45 °C; water and acetonitrile, each with 0.1 % formic acid. Purity: UV peak area at 214 nm after subtracting blank runs of the same sequence. Identity: molecular mass from the mass spectrum. Bacterial endotoxins: endotoxin reader, 0.050 EU/mL limit; result reported as printed by the reader, with spike recovery. Sterility: membrane filtration (canisters), 14-day incubation. Elemental impurities (USP <232>): Agilent ICP-MS; Pb, Cd, Hg, As, Co, V, Ni.

Notes

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Release

This report is signed electronically at release. The signature is printed on page 1, and the release record, added as the last page, gives the date and the verification code.

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Release record

Report GSA-COA-CUST-LA-GSH-20261103-5 · Certificate GSA-2026-833064

Customer and order	LA Peptides · Custom sample (no order)
Sample and report	LA-GSH-20261103 · Glutathione nasal spray Certificate of Analysis
Report reference	GSA-COA-CUST-LA-GSH-20261103-5
Certificate accession	GSA-2026-833064
Released and signed by	Ian Ebert, Laboratory Director
Date and time (UTC)	2026-11-19 20:37:21Z
Signature meaning	Approved for release. The signer reviewed this report and approved its release to its customer.
Approval reference	bef71049-8c58-4edc-a751-35ac41d2d9c1
Electronic signature	Signed electronically in a signed-in GSA staff account.
Original report SHA-256	33d4155c427947437f629d636ba92ddbdff96f067680548bb36fb76f7da81a62
Verify this certificate	https://goldstandardanalytics.com/coa/GSA-2026-833064

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Signature

Ian Ebert, Laboratory Director

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