# Talumer Sciences

CERTIFICATE OF ANALYSIS · LOT RELEASE

talumersciences.com

CERTIFICATE NO.
**PL-26-00008**

VERIFICATION KEY
**HNPQL25M**

Scan or enter both at prymalab.net/testing/verify

CERTIFICATE OF ANALYSIS · LOT RELEASE · ISSUED FOR TALUMER SCIENCES

# Wolverine Blend (BPC-157 5 mg + TB-500 5 mg)

Lot **PL-2609-008** · Lyophilized co-blend powder · Label claim **10 mg/vial** · Distributed as **BPC-157 / TB-500**

**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-2609-008 | 2026-09-17 | 2026-09-19 | 2026-10-03 |
| **RETEST / EXPIRY** | **UNITS IN LOT / SAMPLED** | **STORAGE** | **CERTIFICATE TYPE** |
| 2028-09-17 | 250 / 2 | −20 °C, desiccated, dark | Lot COA, 2 pages |

**COMPOUND**
**Wolverine Blend**
BPC-157 + TB-500 co-lyophilized 1:1 blend

**CAS NUMBER**
137525-51-0 · 77591-33-4

**MOLECULAR FORMULA**
$C_{62}H_{98}N_{16}O_{22}$ · $C_{212}H_{350}N_{56}O_{78}S$

**THEORETICAL MASS (AVG.)**
1419.6 · 4963.5 Da (BPC-157 / TB-500 (Thymosin β4))

**COMPOSITION AND SEQUENCES**

**BPC-157 5 mg:** `H-GEPPPGKPADDAGLV-OH (15 residues; free N- and C-termini)` · **TB-500 (Thymosin β4) 5 mg:** `Ac-SDKPDMAEIEKFDKSKLKKTETQEKNPLPSKETIEQEKQAGES-OH (43 residues; N-acetyl; free C-terminus)`

PURITY · RP-HPLC, AREA %
**99.60%**
Specification 99.0% (blend, sum of both component peaks)

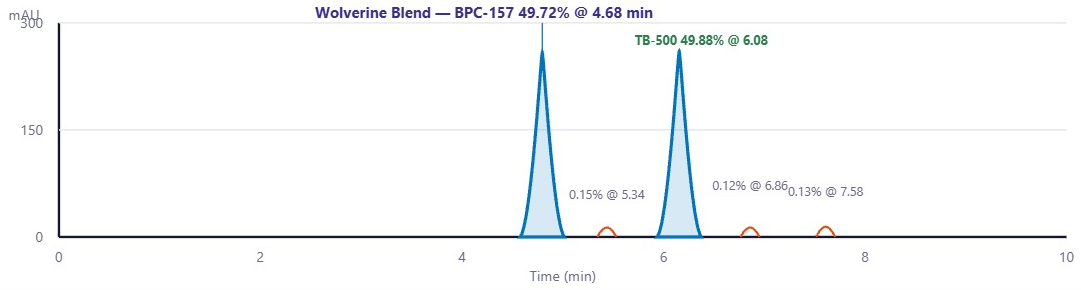
IDENTITY · OBSERVED MASS
**2 / 2**
Components confirmed by LC-MS within ± 1.0 Da: 1419.8 / 4963.7 Da

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

| TEST | METHOD | SPECIFICATION | RESULT | CONCLUSION |
|---|---|---|---|---|
| **Appearance** | Visual inspection | White to off-white lyophilized powder or cake | White lyophilized powder | PASS |
| **Identity (mass)** | LC-MS, ESI positive | Theoretical ± 1.0 Da, each component | 1419.8 Da (BPC-157) · 4963.7 Da (TB-500) | PASS |
| **Purity** | RP-HPLC, UV 214 nm, area% | 99.0% (blend) | 99.60% | PASS |
| **Largest impurity** | RP-HPLC, area% | 1.0% | 0.15% at 5.34 min | PASS |
| **Water content** | Karl Fischer | 5.0% | 2.0% | PASS |
| **Bacterial endotoxin** | LAL, kinetic | ≤ 5.0 EU/mg | 0.10 EU/mg | PASS |
| **Sterility / bioburden** | USP <71>, membrane filtration | No growth after 14 days | No growth; conforms | PASS |

## 1 HPLC CHROMATOGRAM

**Data file:** WLV_PL-2609-008_20260919_01 · Column C18, 150 × 4.6 mm · UV 214 nm




Baseline uncropped; both component peaks and impurities labeled with retention times. Peak table on page 2.



Verify: prymalab.net/testing/verify · **PL-26-00008** · key **HNPQL25M**

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

## 2 HPLC METHOD · WLV_PL-2609-008_20260919_01

**INSTRUMENT**
Waters Alliance e2695, SN E2695B742

**DATA SYSTEM**
Empower 3, Build 3471

**DETECTOR**
Waters 2998 PDA

**DETECTION WAVELENGTH**
214 nm

**COLUMN**
C18, 150 × 4.6 mm, 3.5 µm

**COLUMN PART / SERIAL**
186003326 / USHX18211

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

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

**FLOW RATE**
1.0 mL/min

**COLUMN TEMPERATURE**
30 °C

**INJECTION VOLUME**
20 µL

**RUN TIME**
10 min

**SAMPLE DILUENT**
Water, 0.1% TFA

**SAMPLE CONCENTRATION**
0.5 mg/mL (blend)

**BLANK INJECTED**
Yes

**REFERENCE STANDARD**
In-house Wolverine blend reference, lot PL-RS-WLV-01, component RTs 4.66 / 6.06 min

## 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 (BPC-157) | 4.68 | 2,137,960 | 49.72 |
| 2 | 5.34 | 6,450 | 0.15 |
| 3 (TB-500) | 6.08 | 2,144,840 | 49.88 |
| 4 | 6.86 | 5,160 | 0.12 |
| 5 | 7.58 | 5,590 | 0.13 |
| 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

**IONIZATION / MODE**
ESI, positive

**OBSERVED M/Z (CHARGE)**
1420.3 (1+ [M+H]) · 1442.2 (1+ [M+Na], BPC-157) · 1241.9 (4+ [M+4H]) · 993.7 (5+ [M+5H], TB-500)

**DECONVOLUTED MASS**
1419.8 / 4963.7 Da (by component)

**THEORETICAL MASS**
1419.6 / 4963.5 Da (BPC-157 / TB-500)

**DIFFERENCE**
≤ +0.2 Da (per component)

**DATA FILE**
WLV_PL-2609-008_MS_20260919_01

**ACCEPTANCE**
Within ± 1.0 Da (each component)

## 6 ADDITIONAL TESTS

| TEST | PERFORMED BY | DATE | REPORT / FILE |
|---|---|---|---|
| Water content | PrymaLab | 2026-09-20 | RPT-KF-PL-2609-008 |
| Endotoxin | PrymaLab | 2026-09-21 | RPT-ET-PL-2609-008 |
| Sterility | PrymaLab | 2026-10-02 | RPT-ST-PL-2609-008 |

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 Talumer Sciences, 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-26-00008 and key HNPQL25M 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.