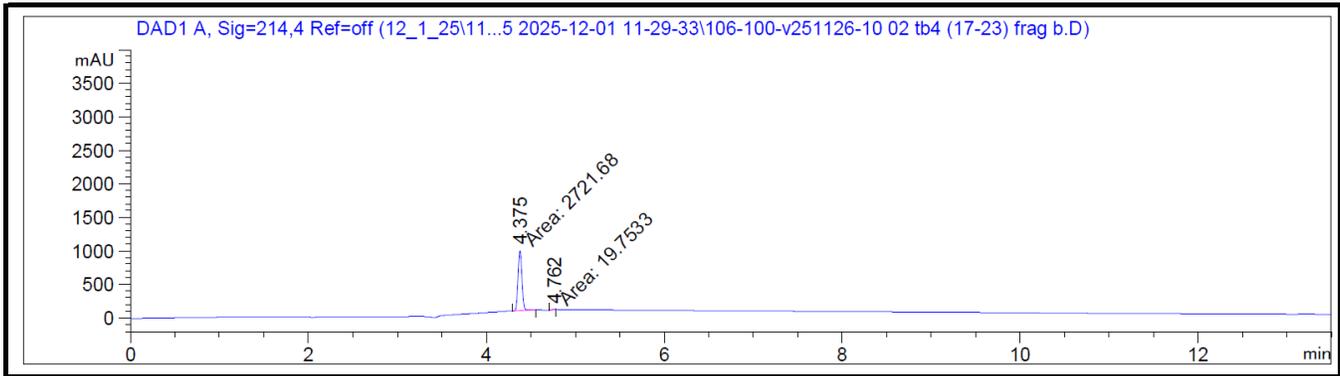


Certificate of Analysis

TB-4 (Frag 17-23) Bulk Powder

Report To:
BioThrive

Compound: TB-4 (Frag 17-23)
Matrix: Bulk Powder
Laboratory ID: V251126-10 002
Date Reported: 12/10/2025
Lot Number: PM256411850823



Analysis	Method	Result
Chromatographic Purity	HPLC-UV/VIS	99.28% + 0.18%
Identity	LC-MS/MS	Matches Standard




Report By: Dustin Newman, Laboratory Director on 12/10/2025



Approved By: Tori Johnson, Operations Manager on 12/10/2025

Please consult A2LA Certificate #6377.01.01 for a list of accredited tests. Samples were received in acceptable condition. The result(s) in this report relate only to the portion of the sample(s) tested. All analyses were performed consistent with the Vanguard Laboratory Quality Management System. Vanguard Laboratory and its staff did not observe or participate in the sample selection process, and cannot confirm the authenticity of the sample or its representativeness of the associated lot/batch.



Vanguard Laboratory
2635 Parkmont Ln
Olympia, Wa 98502
360-967-7010

Certificate of Analysis

TB-4 (Frag 17-23) Bulk Powder

Report To:
BioThrive

Compound: TB-4 (Frag 17-23)
Matrix: Bulk Powder
Laboratory ID: V251126-10 002
Date Reported: 12/10/2025
Lot Number: PM256411850823

Analyte	Method	LOQ (ppm)	Result (ppm)
Arsenic (As)	ICP-MS	0.01	ND
Cadmium (Cd)	ICP-MS	0.01	ND
Lead (Pb)	ICP-MS	0.01	ND
Mercury (Hg)	ICP-MS	0.005	ND

Run ID: 251203

Analysis	Method	Result
Endotoxins	LAL	PASS - <0.05 EU/mg*
Bioburden	USP <61>	PASS - No microorganisms present in sample tested.

*Pass/Fail criteria based on the USP/FDA threshold of 5 EU/kg (350 EU total for a 70 kg adult)

Report By: Dustin Newman, Laboratory Director on 12/10/2025

Approved By: Tori Johnson, Operations Manager on 12/10/2025

ND: Non-Detect

LOD: Limit of Quantification



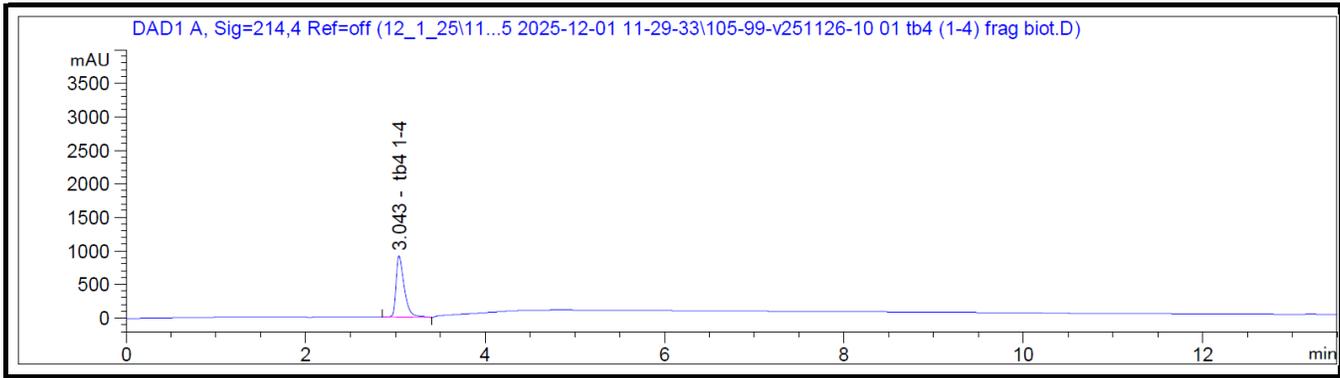
Please consult A2LA Certificate #6377.01.01 for a list of accredited tests. Samples were received in acceptable condition. The result(s) in this report relate only to the portion of the sample(s) tested. All analyses were performed consistent with the Vanguard Laboratory Quality Management System. Vanguard Laboratory and its staff did not observe or participate in the sample selection process, and cannot confirm the authenticity of the sample or its representativeness of the associated lot/batch.

Certificate of Analysis

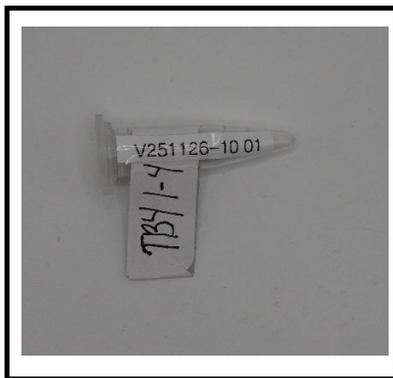
TB-4 (Frag 1-4) Bulk Powder

Report To:
BioThrive

Compound: TB-4 (Frag 1-4)
Matrix: Bulk Powder
Laboratory ID: V251126-10 001
Date Reported: 12/10/2025
Lot Number: n/a



Analysis	Method	Result
Chromatographic Purity	HPLC-UV/VIS	>99.80% + 0.18%
Identity	LC-MS/MS	Matches Standard




Report By: Dustin Newman, Laboratory Director on 12/10/2025



Approved By: Tori Johnson, Operations Manager on 12/10/2025

Please consult A2LA Certificate #6377.01.01 for a list of accredited tests. Samples were received in acceptable condition. The result(s) in this report relate only to the portion of the sample(s) tested. All analyses were performed consistent with the Vanguard Laboratory Quality Management System. Vanguard Laboratory and its staff did not observe or participate in the sample selection process, and cannot confirm the authenticity of the sample or its representativeness of the associated lot/batch.



Vanguard Laboratory
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Olympia, Wa 98502
360-967-7010

Certificate of Analysis

TB-4 (Frag 1-4) Bulk Powder

Report To:
BioThrive

Compound: TB-4 (Frag 1-4)
Matrix: Bulk Powder
Laboratory ID: V251126-10 001
Date Reported: 12/10/2025
Lot Number: n/a

Analyte	Method	LOQ (ppm)	Result (ppm)
Arsenic (As)	ICP-MS	0.01	ND
Cadmium (Cd)	ICP-MS	0.01	ND
Lead (Pb)	ICP-MS	0.01	ND
Mercury (Hg)	ICP-MS	0.005	ND

Run ID: 251203

Analysis	Method	Result
Endotoxins	LAL	PASS - <0.05 EU/mg*
Bioburden	USP <61>	PASS - No microorganisms present in sample tested.

*Pass/Fail criteria based on the USP/FDA threshold of 5 EU/kg (350 EU total for a 70 kg adult)

Report By: Dustin Newman, Laboratory Director on 12/10/2025

Approved By: Tori Johnson, Operations Manager on 12/10/2025

ND: Non-Detect

LOD: Limit of Quantification



Please consult A2LA Certificate #6377.01.01 for a list of accredited tests. Samples were received in acceptable condition. The result(s) in this report relate only to the portion of the sample(s) tested. All analyses were performed consistent with the Vanguard Laboratory Quality Management System. Vanguard Laboratory and its staff did not observe or participate in the sample selection process, and cannot confirm the authenticity of the sample or its representativeness of the associated lot/batch.

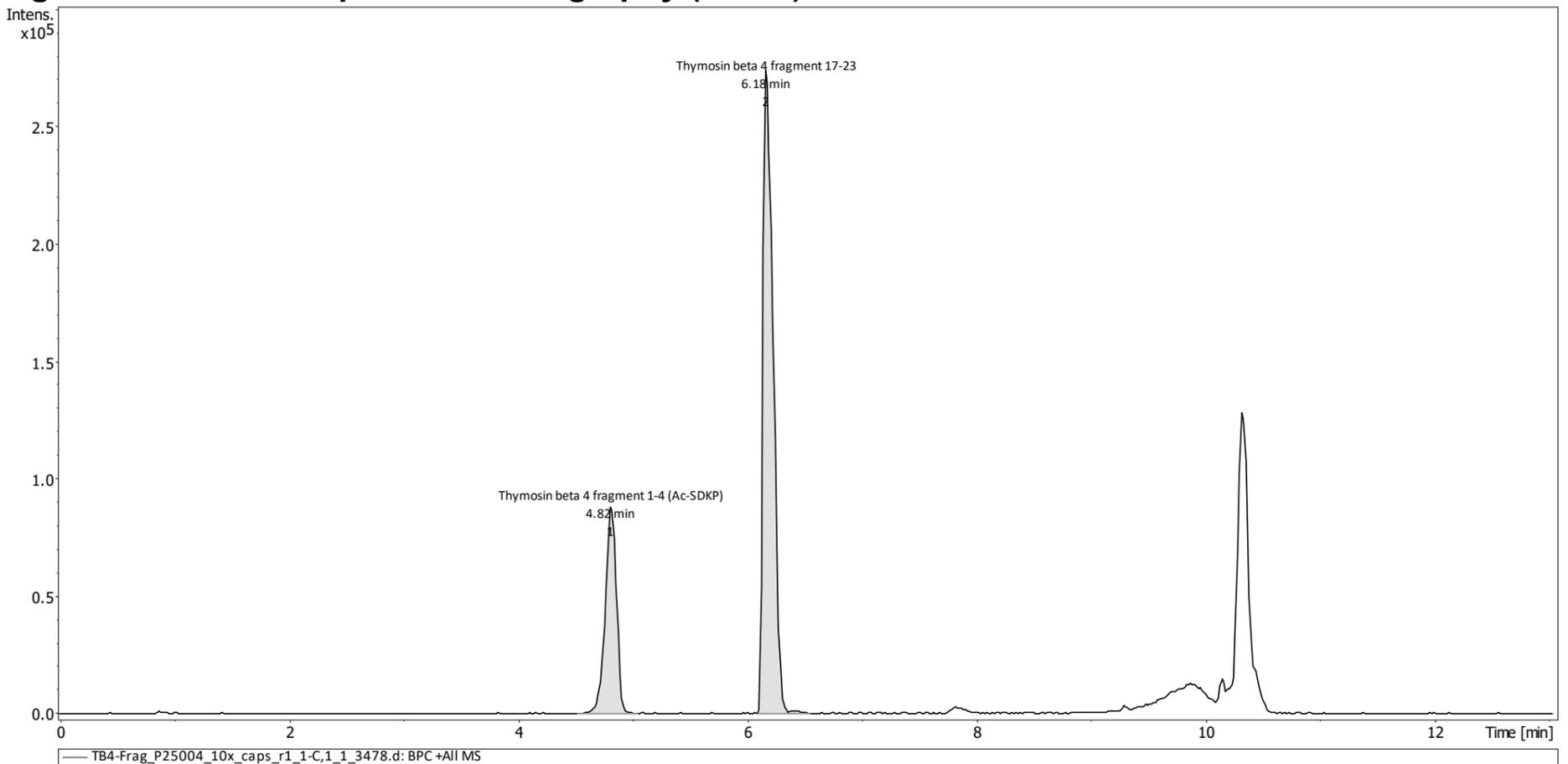
Certificate of Analysis

TB4 fragment 1-4, Thymosin β 4 Fragment 17-23 capsules

Compound : Ac-SDKP,TB-500
Lot number : P25004
Analysis date : 2025-02-26
Ac-SDKP : 511.8 mcg/capsule
TB-500 : 635.9 mcg/capsule
Method : HPLC-MS

Client : BioThive Peptide
www.biothrive.us

High Performance Liquid Chromatography (HPLC) MS



Ac-SDKP detected at 4.82 minutes
TB-500 detected at 6.18 minutes

Background peaks due to capsule filler

Analysis Performed by
 Ken Pendarvis, ChE
 Analytical Chemist
 MZ Biolabs
contact@mzbiolabs.com

Quantification by HPLC-MS	Ac-SDKP	TB-500
Replicates	mcg/capsule	mcg/capsule
TB4-Frag_P25004_caps_r1	537.7	628.43
TB4-Frag_P25004_caps_r2	538.9	601.93
TB4-Frag_P25004_caps_r3	458.9	677.35
Average mcg/capsule	511.8	635.9



2025-03-07



MZ Biolabs
2102 N Country Club Rd
Tucson, AZ 85716
contact@mzbiolabs.com
www.mzbiolabs.com

TB4 fragment 1-4, Thymosin β 4 Fragment 17-23 capsules

TB4 fragment 1-4 PubChem CID: 65938
<https://pubchem.ncbi.nlm.nih.gov/compound/65938>

Mass Spectrometry (MS) – Identity Test

Identity confirmed using HPLC-MS

Molecular weight calculated using monoisotopic m/z values from mass spectrum

Note : Monoisotopic m/z values are not easily seen in full spectrum view for larger molecules and peptides.
The dominant isotopic peak (base peak) shown in the spectrum below can be used to approximate the average molecular weight frequently reported by vendors and databases as a secondary means of confirmation.

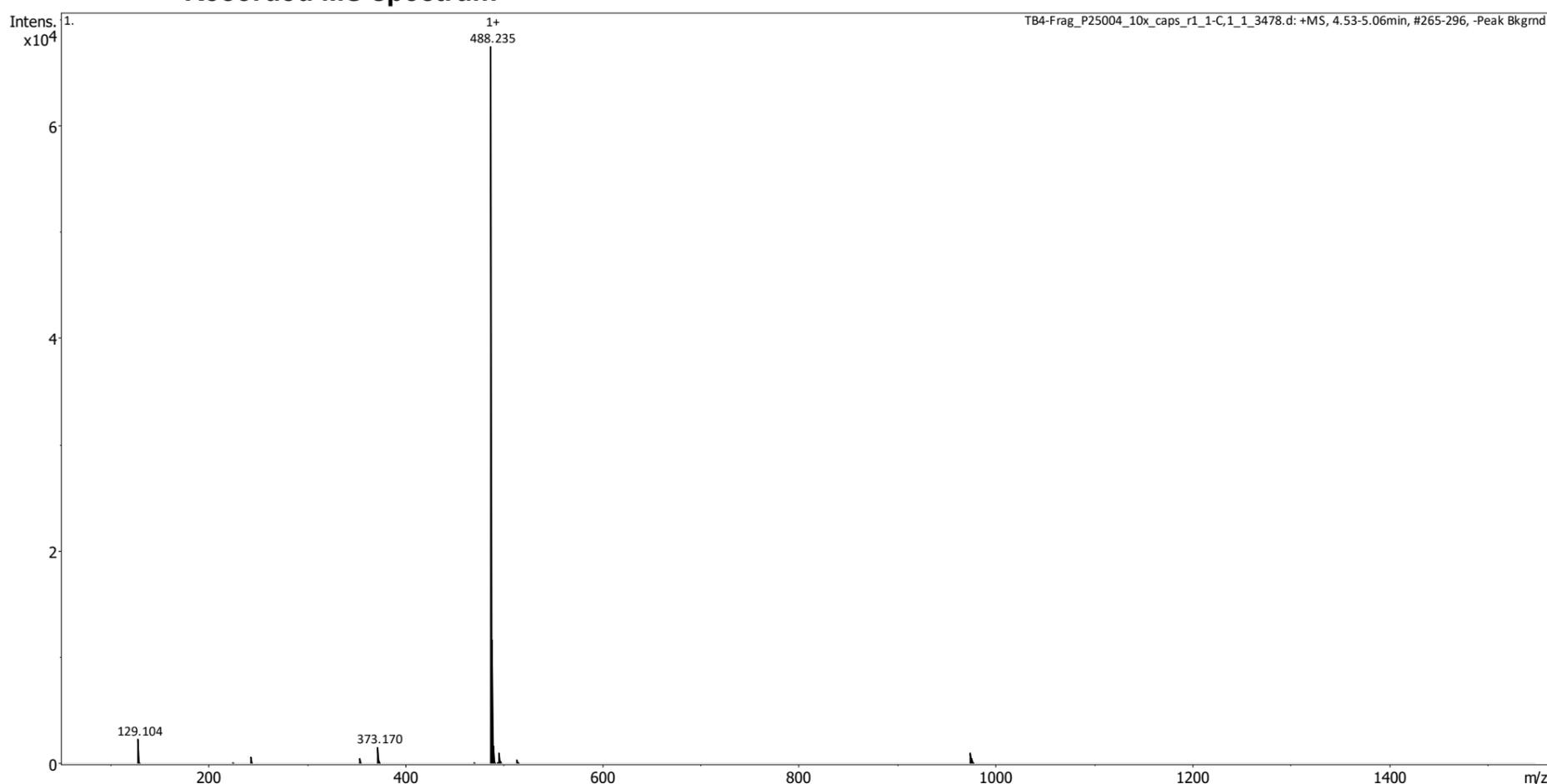
Thymosin beta4 fragment 1-4 (Ac-SDKP)

Expected monoisotopic mass : 487.23 Da

Measured monoisotopic mass : 487.24 Da

Molecular weight confirmed

Recorded MS spectrum



Analysis Performed by
Ken Pendarvis, ChE
Analytical Chemist
MZ Biolabs
contact@mzbiolabs.com

2025-03-07



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2102 N Country Club Rd
Tucson, AZ 85716
contact@mzbiolabs.com
www.mzbiolabs.com

TB4 fragment 1-4, Thymosin β 4 Fragment 17-23 capsules

Thymosin β 4 Fragment 17-23 PubChem CID: 62707662
<https://pubchem.ncbi.nlm.nih.gov/compound/62707662>

Mass Spectrometry (MS) – Identity Test

Identity confirmed using HPLC-MS

Molecular weight calculated using monoisotopic m/z values from mass spectrum

Note : Monoisotopic m/z values are not easily seen in full spectrum view for larger molecules and peptides.
The dominant isotopic peak (base peak) shown in the spectrum below can be used to approximate the average molecular weight frequently reported by vendors and databases as a secondary means of confirmation.

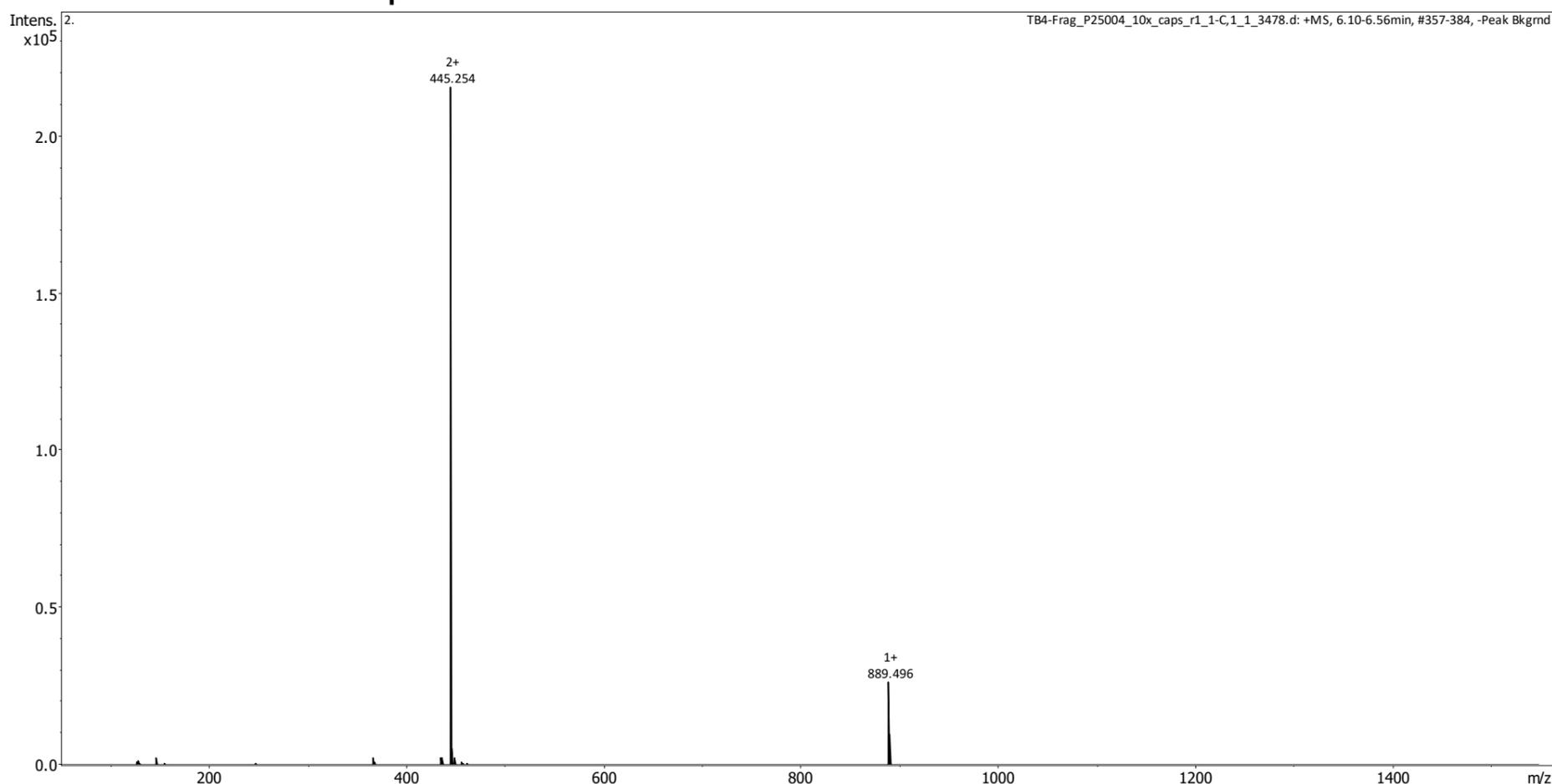
TB-500 (Thymosin beta 4 fragment 17-23)

Expected monoisotopic mass : 888.49 Da

Measured monoisotopic mass : 888.50 Da

Molecular weight confirmed

Recorded MS spectrum



Analysis Performed by
Ken Pendarvis, ChE
Analytical Chemist
MZ Biolabs
contact@mzbiolabs.com

2025-03-07