



CERTIFICATE OF ANALYSIS

Issued by an ISO/IEC 17025-accredited laboratory · raw data appended (page 2)

PASS

QC released for dispatch



Scan to verify

TB-500 — 10mg

Thymosin Beta-4

1. PRODUCT IDENTIFICATION

Synonym	Thymosin Beta-4	Label claim	10mg
Sequence / structure	Ac-SDKPDMAEIEKFDKSKLKKTTETQEKNPSPK ETIEQEKQAGES	Lot / Batch	ZX260512-449 / B42640
Mol. formula	C212H350N56O78S	Manufacture date	17 May 2026
Mol. weight	4963.44 g/mol	Date of analysis	23 May 2026
CAS number	77591-33-4	Storage	-20 °C, dark, desiccated
Salt form	Acetate salt		

2. ANALYTICAL TEST RESULTS

Test	Method	Specification	Result	Verdict
Appearance	Visual	White/off-white powder	White to off-white lyophilized powder	PASS
Identity (ESI-MS)	LC-MS	Matches 4963.44 Da	4963.49 Da (Δ 10 ppm)	PASS
Purity	RP-HPLC, UV 220 nm	$\geq 98.0\%$ area	98.93%	PASS
Related substances	RP-HPLC	Single ≤ 1.0 / Total $\leq 2.0\%$	0.72 / 1.07%	PASS
Water content	Karl Fischer (USP <921>)	$\leq 8.0\%$	1.6%	PASS
Counter-ion: acetate	Ion chromatography	Report (3.0–15.0%)	10.3%	PASS
Net peptide content	Amino-acid analysis	$\geq 80.0\%$	86.3%	PASS
Bacterial endotoxin	LAL kinetic (USP <85>)	< 5.0 EU/mg	0.07 EU/mg	PASS
Heavy metals	ICP-MS (ICH Q3D)	Conforms	Conforms	PASS

CONCLUSION

All tested parameters CONFORM to the acceptance specifications. The batch is of high chromatographic purity ($\geq 98\%$) with an impurity profile, identity and residual/contaminant results meeting pharmaceutical-grade quality requirements. Material released. Supporting RP-HPLC chromatogram and ESI-MS spectrum are appended on page 2.

DLW.

Dr. Li Wenhua

Analyst · 23 May 2026 · Zhongxi Research Institute

DLX.

Dr. Lin Xia (QC Manager)

Approved by · 23 May 2026 · Zhongxi Research Institute

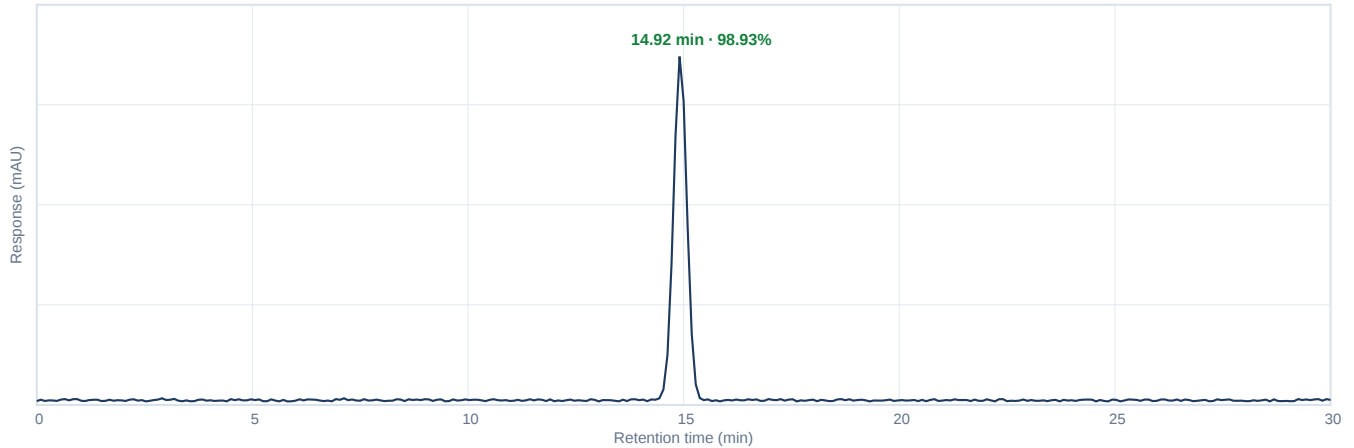


APPENDIX — ANALYTICAL RAW DATA

TB-500 10mg · Lot ZX260512-449 · Cert. ZXR-COA-2026-52066

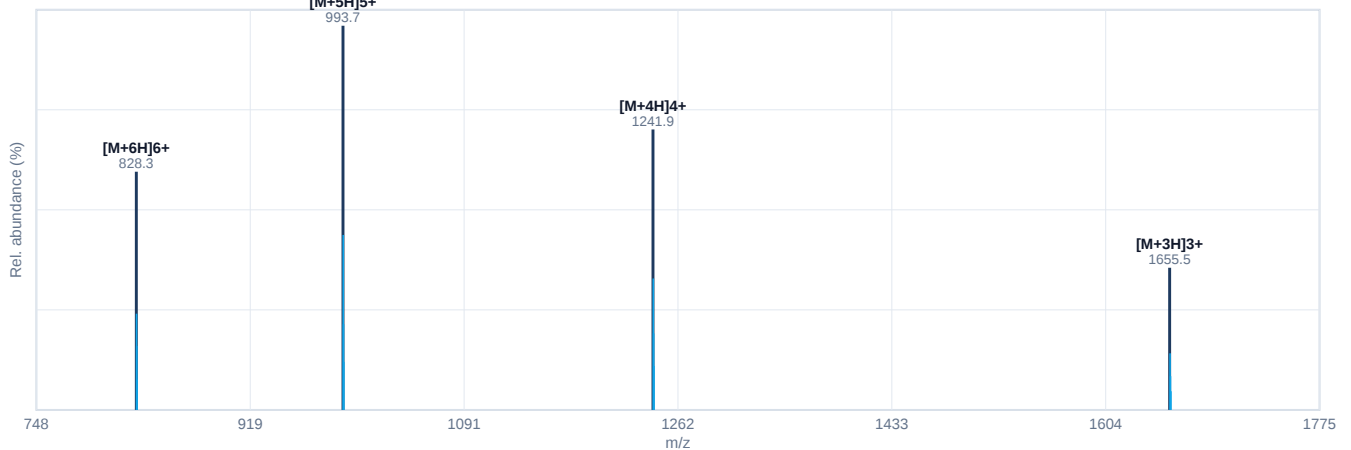


Figure 1. RP-HPLC Chromatogram (UV 220 nm)



Peak #	RT (min)	Area (μV·s)	Area %	Assignment
1	14.92	1023881	98.93	Main (target)
2	3.01	3917	0.37	Impurity / related substance
3	7.13	3801	0.35	Impurity / related substance
4	17.11	2387	0.22	Impurity / related substance
5	7.94	1219	0.13	Impurity / related substance

Figure 2. ESI-MS Spectrum (positive ion mode)



Interpretation

Identity confirmed by ESI-MS. Observed ions [M+3H]³⁺ 1655.5, [M+4H]⁴⁺ 1241.9, [M+5H]⁵⁺ 993.7, [M+6H]⁶⁺ 828.3 deconvolute to a neutral monoisotopic-average mass of 4963.49 Da (theoretical 4963.44 Da; mass error 10 ppm), consistent with TB-500. No co-eluting species above 0.5% indicative of misidentification.

Methods — RP-HPLC: Agilent 1260 Infinity II; Zorbax SB-C18 4.6×250 mm, 5 μm; A: 0.1% TFA in water, B: 0.1% TFA in MeCN; 10–70% B over 30 min; 1.0 mL/min; 25 °C; 20 μL injection. MS: AB Sciex TripleTOF, ESI+, capillary 4.5 kV, deconvolution by Bio Tool Kit. KF: Metrohm 901. IC: Thermo Dionex ICS-6000. ICP-MS: Agilent 7900.