



CERTIFICATE OF ANALYSIS

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

PASS

QC released for dispatch



Scan to verify

Livagen — 50mg

Liver Bioregulator

1. PRODUCT IDENTIFICATION

Synonym	Liver Bioregulator	Label claim	50mg
Sequence / structure	Lys-Glu-Asp-Ala	Lot / Batch	ZX260512-732 / B28984
Mol. formula	C18H31N5O9	Manufacture date	19 May 2026
Mol. weight	461.47 g/mol	Date of analysis	26 May 2026
CAS number	No CAS assigned	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 461.47 Da	461.47 Da (Δ 0 ppm)	PASS
Purity	RP-HPLC, UV 220 nm	$\geq 98.0\%$ area	98.76%	PASS
Related substances	RP-HPLC	Single ≤ 1.0 / Total $\leq 2.0\%$	0.61 / 1.24%	PASS
Water content	Karl Fischer (USP <921>)	$\leq 8.0\%$	3.3%	PASS
Counter-ion: acetate	Ion chromatography	Report (3.0–15.0%)	5.7%	PASS
Net peptide content	Amino-acid analysis	$\geq 80.0\%$	89.8%	PASS
Bacterial endotoxin	LAL kinetic (USP <85>)	< 5.0 EU/mg	0.08 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.

DZK.

Dr. Zhou Kai

Analyst · 26 May 2026 · Zhongxi Research Institute

DGT.

Dr. Guo Tao (QC Manager)

Approved by · 26 May 2026 · Zhongxi Research Institute



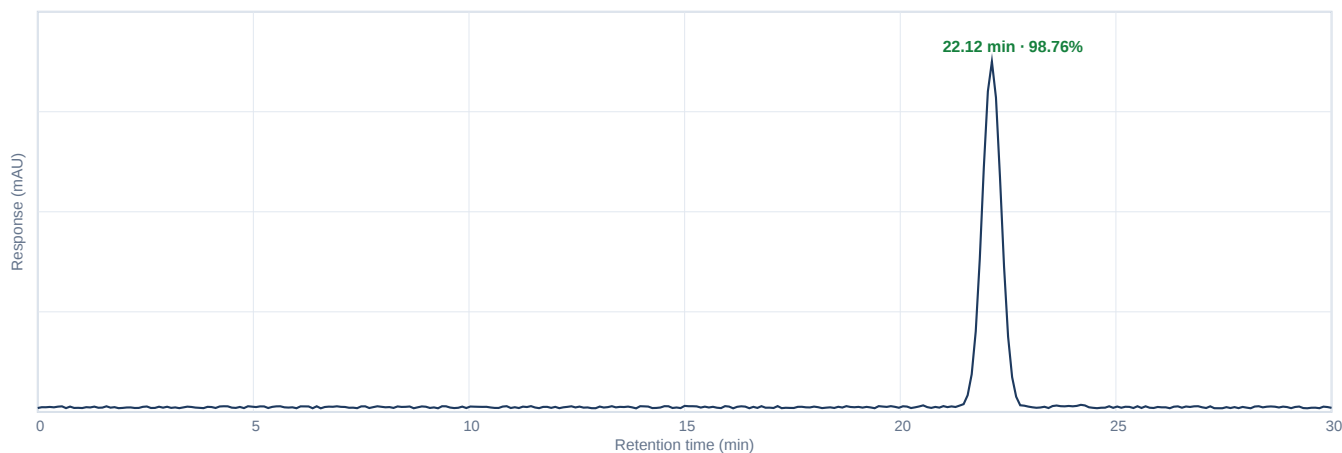
APPENDIX — ANALYTICAL RAW DATA

Livagen 50mg · Lot ZX260512-732 · Cert. ZXR-COA-2026-84544



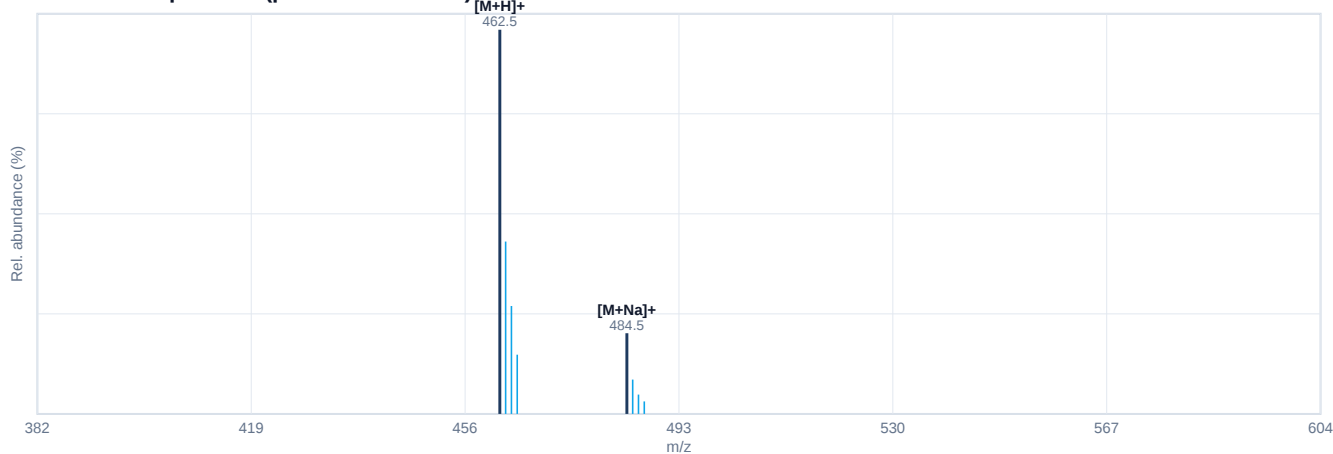
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Figure 1. RP-HPLC Chromatogram (UV 220 nm)



Peak #	RT (min)	Area (μV·s)	Area %	Assignment
1	22.12	933792	98.76	Main (target)
2	24.23	5453	0.52	Impurity / related substance
3	20.54	3215	0.32	Impurity / related substance
4	23.79	2721	0.28	Impurity / related substance
5	15.23	1232	0.12	Impurity / related substance

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



Interpretation

Identity confirmed by ESI-MS. Observed ions [M+H]⁺ 462.5, [M+Na]⁺ 484.5 deconvolute to a neutral monoisotopic-average mass of 461.47 Da (theoretical 461.47 Da; mass error 0 ppm), consistent with Livagen. 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.