中析研究所
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CERTIFICATE OF ANALYSIS

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

PASS
QC released for dispatch

Scan to verify

GHK-Cu — 50mg

Copper Peptide GHK-Cu

1. PRODUCT IDENTIFICATION

Synonym	Copper Peptide GHK-Cu	**Label claim**	50mg
Sequence / structure	Gly-His-Lys : Cu(II) complex	**Lot / Batch**	ZX260512-694 / B82408
Mol. formula	C14H22CuN6O4	**Manufacture date**	17 May 2026
Mol. weight	401.91 g/mol	**Date of analysis**	28 May 2026
CAS number	89030-95-5	**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 401.91 Da	401.91 Da (Δ 0 ppm)	**PASS**
Purity	RP-HPLC, UV 220 nm	≥ 98.0% area	99.81%	**PASS**
Related substances	RP-HPLC	Single ≤1.0 / Total ≤2.0%	0.12 / 0.19%	**PASS**
Water content	Karl Fischer (USP <921>)	≤ 8.0%	1.9%	**PASS**
Counter-ion: acetate	Ion chromatography	Report (3.0–15.0%)	6.1%	**PASS**
Net peptide content	Amino-acid analysis	≥ 80.0%	90.3%	**PASS**
Bacterial endotoxin	LAL kinetic (USP <85>)	< 5.0 EU/mg	0.04 EU/mg	**PASS**
Heavy metals	ICP-MS (ICH Q3D)	Conforms	Conforms	**PASS**
Copper content	ICP-MS (identity)	15.0–16.5% (theory 15.8%)	15.8%	**PASS**

CONCLUSION
All tested parameters CONFORM to the acceptance specifications. The batch is of high chromatographic purity (≥ 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.

DZL.

Dr. Zhao Liang
Analyst · 28 May 2026 · Zhongxi Research Institute

DGT.

Dr. Guo Tao (QC Manager)
Approved by · 28 May 2026 · Zhongxi Research Institute

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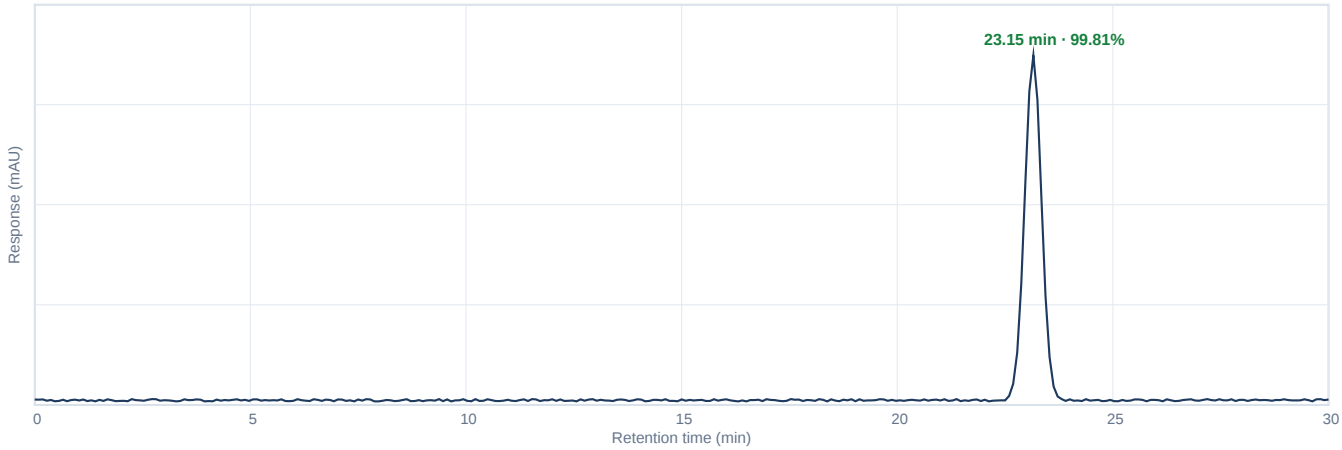
APPENDIX — ANALYTICAL RAW DATA

GHK-Cu 50mg · Lot ZX260512-694 · Cert. ZXR-COA-2026-60640

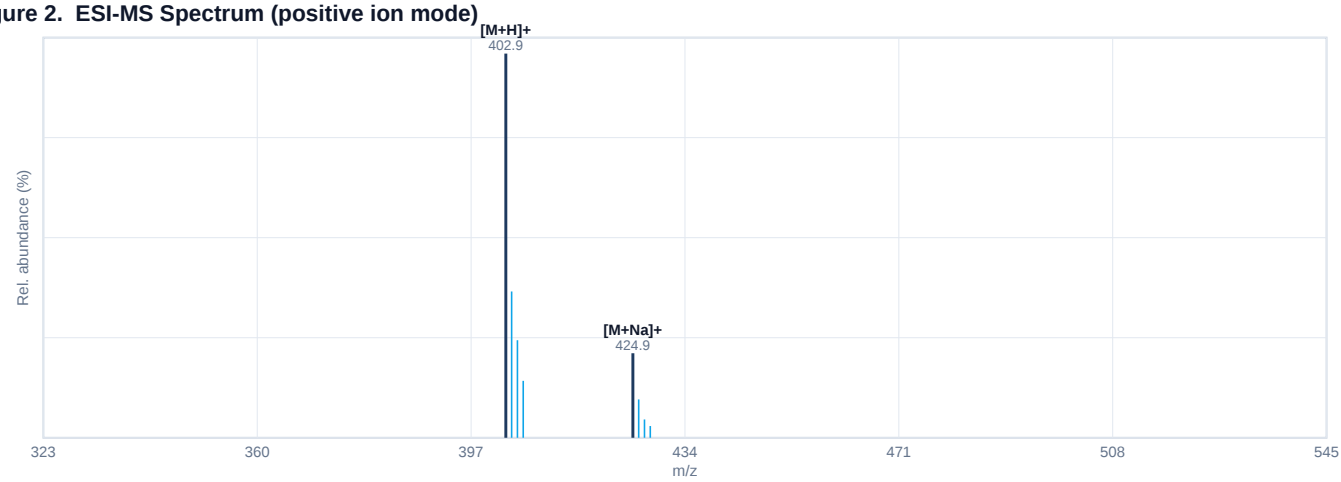
Scan to verify

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



Peak #	RT (min)	Area (μV·s)	Area %	Assignment
1	23.15	1065394	99.81	Main (target)
2	8.55	846	0.08	Impurity / related substance
3	21.78	677	0.07	Impurity / related substance
4	4.73	372	0.04	Impurity / related substance

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



Interpretation

Identity confirmed by ESI-MS. Observed ions [M+H]+ 402.9, [M+Na]+ 424.9 deconvolute to a neutral monoisotopic-average mass of 401.91 Da (theoretical 401.91 Da; mass error 0 ppm), consistent with GHK-Cu. 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.