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ANALYTICAL LABORATORY · REYKJAVÍK, IS

SVP-2026-00312

ISSUED 2026-03-16 · ACCREDITATION AL-1142
ISO/IEC 17025 · GMP · GLP

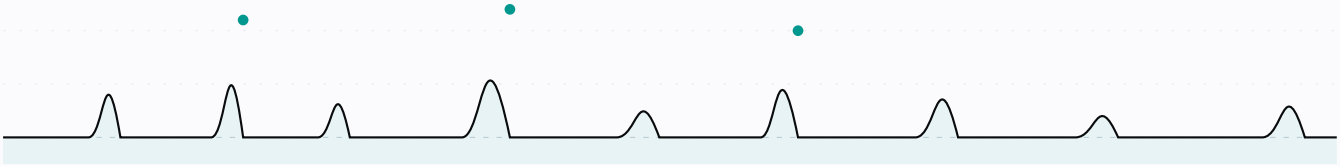
CERTIFICATE OF ANALYSIS

AUTHENTIC

GHK-Cu (Copper) 50mg

Björn Healthcare ehf. · Sterile lyophilizate, 50 mg per 3 ml clear glass vial, rubber s topper + aluminium flip-off (royal-blue cake)

REPRESENTATIVE CHROMATOGRAM · HPLC-UV 205 NM



BATCH NO.
BJRN-209FR7H

ANALYTICAL METHODS
RP-HPLC-UV 220 nm · LC-ESI-MS · AAA (amino acid analysis) · Ion chromatography (counter-ion) · Karl Fischer 2.5.32 · GC-MS (headspace) · ICP-MS · Kinetic chromogenic LAL 2.6.14 · Ph. Eur. 2.6.1 sterility · Ph. Eur. 2.6.12 microbial limits

MANUFACTURED
2026-05-17

EXPIRY
2028-02-17

RECEIVED
2026-03-16

RELEASE
2026-03-16

DECLARED COMPOSITION
GHK-Cu (Copper) 50mg — tripeptide-copper complex; sequence: Gly-His-Lys · Cu^{2+}; CAS 89030-95-5; theoretical MW 402.92 Da

Analytical results

20 TESTS · ALL METHODS VALIDATED

SUBSTANCE / PARAMETER	RESULT	LOQ	LIMIT	METHOD
Appearance — sterile lyophilized cake, royal-blue	**Conforms**	—	homogeneous blue cake, no particulates	Visual
Solubility (water for injection, 2 mg/ml, 25 °C)	**Complete within 60 s — clear colourless solution**	—	Clear, no visible particles	Visual (Ph. Eur. 2.2.1)

Identification — HPLC retention time	**Matches reference**	—	±2.0 % of ref	RP-HPLC-UV 220 nm
Identification — sequence / mass match	**Confirmed** CAS 89030-95-5	—	Match theoretical within ±1 Da	LC-ESI-MS
Molecular weight (measured)	**402.70 Da** Δ = -0.22 Da	0.5 Da	402.92 Da ± 1.0 Da (theoretical)	ESI-MS
Chromatographic purity (main peak)	**98.77 %**	0.05 %	≥ 98.0 %	RP-HPLC-UV 220 nm
Any single impurity (max)	**0.09 %**	0.05 %	≤ 1.00 %	RP-HPLC-UV 220 nm
Peptide content (amino acid analysis)	**84.7 % w/w**	0.5 %	≥ 80.0 % w/w	AAA (6 N HCl, 110 °C, 24 h)
Trifluoroacetate (TFA counter-ion)	**0.71 % w/w**	0.05 %	≤ 1.00 % w/w	IC (ion chromatography)
Copper content (Cu^{2+})	**15.78 % w/w**	0.1 %	15.30 % ± 1.0 % w/w (theoretical Cu:GHK 1:1)	ICP-MS
Water content (Karl Fischer)	**2.31 % w/w**	0.1 %	≤ 5.0 % w/w	Ph. Eur. 2.5.32
Residual acetonitrile	**294 ppm**	10 ppm	≤ 410 ppm (ICH Q3C Class 2)	GC-MS (headspace)
Residual DMF	**151 ppm**	10 ppm	≤ 880 ppm (ICH Q3C Class 2)	GC-MS (headspace)
Lead (Pb)	**0.139 ppm**	0.02 ppm	≤ 0.5 ppm (ICH Q3D parenteral)	ICP-MS
Arsenic + Cadmium + Mercury (total)	**0.070 ppm**	0.02 ppm	≤ 1.5 ppm (ICH Q3D parenteral)	ICP-MS
Bacterial endotoxins (LAL)	**2.85 EU/mg**	0.125 EU/mg	< 10.0 EU/mg	Kinetic chromogenic LAL (Ph. Eur. 2.6.14)
TAMC (aerobic bacteria, pre-lyophilization bulk)	**7 CFU/g**	1 CFU/g	≤ 10^2 CFU/g	Ph. Eur. 2.6.12
TYMC (yeast / molds, pre-lyophilization bulk)	**4 CFU/g**	1 CFU/g	≤ 10^1 CFU/g	Ph. Eur. 2.6.12
Sterility (final lyophilized vial)	**Complies — no growth**	—	No growth, 14 d incubation	Ph. Eur. 2.6.1 (direct inoculation)
Container closure integrity	**Pass**	—	No dye uptake	Dye ingress (0.05 % methylene blue, 2 h vacuum)

INDEPENDENT VERIFICATION

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AVGDKR

VERIFICATION CODE

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Quality assurance · AL-1142

SHA-256 CHECKSUM
0-x49178ebb96ce54e949178ebb96ce54e949178ebb96ce54e
Tamper-evident digest

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SAMPLE RETENTION

Sealed aliquot retained for 24 months from issue date under controlled conditions (Ph. Eur. 5.1, −20 °C).

DISPUTE WINDOW

Requests for re-testing accepted within 30 days of report publication. Contact lab@solvipurity.com quoting the report number.