pH SOLUTIONS

pH Solutions, LLC
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(626) 734-6620 · www.phsolutionslab.com
ISO/IEC 17025:2017 ACCREDITED · ilac-MRA · PJLA · #84351

CERTIFICATE OF
Analysis
NUL-COA-GHK-20260707-01
Prepared for: NuLumin Bio-Sciences
Issued Aug15,2026

ANALYTICAL SUBJECT

GHK-Cu
50 mg/vial · NUL-V-GHK-50

PREPARED FOR
NuLumin Bio-Sciences

RELEASED

REPRESENTATIVE VIAL
GHK-Cu 50 mg
NUL-GHK-20260707-01

PEPTIDE PURITY (HPLC)	WATER ACTIVITY	MICROBIAL / MYCOTOXIN	FILL CONFORMANCE
Pass	**Pass**	**ND**	**96/96**
≥ 99% spec · Pass	< 0.65 spec · Pass	All analytes · Pass	50.00 mg target · Pass

LOT NUMBER	MANUFACTURE	EXPIRY	VIALS IN LOT	TARGET FILL (mg)
NUL-GHK-20260707-01	7-Jul-2026	7-Jul-2027	96	50.00

01 Analytical Test Results

ALL PARAMETERS CONFORM

PARAMETER	METHOD	SPECIFICATION	RESULT	WHY IT MATTERS
Appearance Visual Inspection	Visual	Violet to purple lyophilized powder cake; free of visible particulates	**Pass**	Visual anomalies such as discoloration, clumping or particulates can indicate degradation, contamination, or moisture ingress, any of which compromise product integrity before analytical testing is even performed.
Purity Area %	HPLC @ 274nm	≥99%	**Pass**	Measures what fraction of the material is the complete target peptide vs. synthesis byproducts, truncated sequences, or degradation products. High purity ensures the results reflect the intended compound and ensures identity by confirming retention time during this test aligns with a certified reference standard.
Microbials Total Aerobic Count · Enterobacteriaceae · Total Yeast & Mold	qPCR	Total Aerobic Count: ND in 1g; Enterobacteriaceae: ND in 1g; Total Yeast & Mold: ND in 1g	**Not Detected — Pass (all 3 analytes)**	Confirms the finished vial is free of viable bacteria, Enterobacteriaceae, yeast, and mold. Microbial contamination in reconstituted peptide solutions can invalidate cell-based and in vivo research results.
Mycotoxins Aflatoxins B1/B2/G1/G2 · Ochratoxin A · Total Aflatoxins	LCMS	Aflatoxins B1, B2, G1, G2 <4 µg/kg each; Total Aflatoxins <20 µg/kg; Ochratoxin A <20 µg/kg	**Not Detected — Pass (all 6 analytes)**	Mycotoxins are toxic fungal metabolites that can contaminate peptide raw materials during synthesis or storage. Even trace levels of aflatoxins and ochratoxin A are potent carcinogens and nephrotoxins that confound research outcomes and pose handling risks.

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01 Analytical Test Results (continued)

ALL PARAMETERS CONFORM

PARAMETER	METHOD	SPECIFICATION	RESULT	WHY IT MATTERS
Water Activity Moisture determination	Water Activity Meter	<0.65 aw (threshold for microbial growth)	**Pass**	Lyophilized peptides absorb atmospheric moisture, which dilutes the active content per mg and accelerates degradation. Knowing water content allows researchers to calculate the true peptide mass when preparing solutions for experiments.
Residual solvents Headspace analysis, tested at raw material inspection	GC headspace	ICH Q3C Class 2/3 limits	**Below ICH limits — Pass**	Organic solvents such as DMF, DCM, and acetonitrile are used during synthesis and purification. Residual traces can interfere with biological assays, affect cell viability, and indicate incomplete purification of the final product. This test was performed on the bulk API lot during incoming raw material inspection prior to manufacturing.
Elemental Impurities (Heavy Metals) Arsenic · Cadmium · Lead · Mercury, tested at raw material inspection	ICPMS	USP <232>	**Below USP limits — Pass**	Heavy metals accumulate in biological systems and can interfere with enzyme activity, receptor binding, and cell viability. Even trace levels of arsenic, cadmium, lead, and mercury can confound in vitro and in vivo research outcomes.

02 Authorization & Release

TESTED & CERTIFIED BY

Raquel Keledjian

Raquel Keledjian
Laboratory Director · pH Solutions, LLC
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ilac-MRA PJLA Testing
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