



pH SOLUTIONS

pH Solutions, LLC
181 W. Huntington Dr. #106 · Monrovia, CA 91016
(626) 734-6620 · www.phsolutionslab.com
ISO/IEC 17025:2017 ACCREDITED · ilac-MRA · PJLA · #84351

CERTIFICATE OF
Analysis
NUL-COA-SEM-20260601-01
Prepared for: NuLumin Bio-Sciences
Issued Jun16, 2026

ANALYTICAL SUBJECT

Semax

10 mg/vial · NUL-V-SEM-10

PREPARED FOR
NuLumin Bio-Sciences



REPRESENTATIVE VIAL
Semax 10 mg
NUL-SEM-20260601-01

PEPTIDE PURITY (HPLC)

99%
≥ 99% spec · Pass

WATER ACTIVITY

0.43 aw
< 0.65 spec · Pass

MICROBIAL / MYCOTOXIN

ND
All analytes · Pass

FILL CONFORMANCE

195/195
10.00 mg target · Pass

LOT NUMBER	MANUFACTURE	EXPIRY	VIALS IN LOT	TARGET FILL (mg)
NUL-SEM-20260601-01	01-June-2026	01-June-2027	195	10.00

01 Analytical Test Results

ALL PARAMETERS CONFORM

PARAMETER	METHOD	SPECIFICATION	RESULT	WHY IT MATTERS
Appearance Visual Inspection	Visual	White to off-white 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%	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)	0.43 aw	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

ISO/IEC 17025:2017 · Accreditation #84351



FOR RESEARCH USE ONLY — NOT FOR HUMAN OR VETERINARY USE — NOT FOR DIAGNOSTIC PROCEDURES

For Research Use Only. Not for use in diagnostic procedures. Not for human or veterinary use. This product has not been evaluated by the FDA for safety or efficacy. NuLumin Bio-Sciences makes no representations regarding the safety, efficacy, or fitness of this product for any purpose other than laboratory research

This Certificate of Analysis (COA) is issued by NuLumin Bio-Sciences. While the data herein is derived from analytical testing by pH Solutions, NuLumin Bio-Sciences assumes all responsibility for the final quality review, release, and marketing of this lot. The manufacturer and testing laboratory act as independent contractors; they make no warranties to the end-user and shall be held harmless from any claims arising from the distribution or use of this product.

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