KH
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Document No.
KERUIHK-QC-AD0500

CERTIFICATE OF ANALYSIS

NAD+

CAS No. 53-84-9

Batch No.	Grade	Issue Date
PB-2026-NAD-0500	GMP	Jul 14, 2026

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ISO 9001:2015 GMP Certified

Purity (HPLC)	Molecular Weight	Test Method	Endotoxin
99.0%	663.4 Da	RP-HPLC / ESI-MS	< 0.2 EU/mg

Appearance	Storage Condition	Retest Date
White powder	-20°C, dry, dark	24 months from manufacture

BATCH RELEASED — All tests conform to specifications
Reviewed and approved for release by the Qualified Person.

AUTHORIZED & RELEASED BY

Dr. Priya Nair
Analytical Chemistry Lead
KeruiHk · Hong Kong
Issue Date: Jul 14, 2026

QC Laboratory	Certification
Analytical Testing Dept.	ISO 9001:2015 • GMP

VERIFY DOCUMENT

KeruiHk
Scan to verify

Document Verification
KERUIHK-4BD0-530D-4AA2

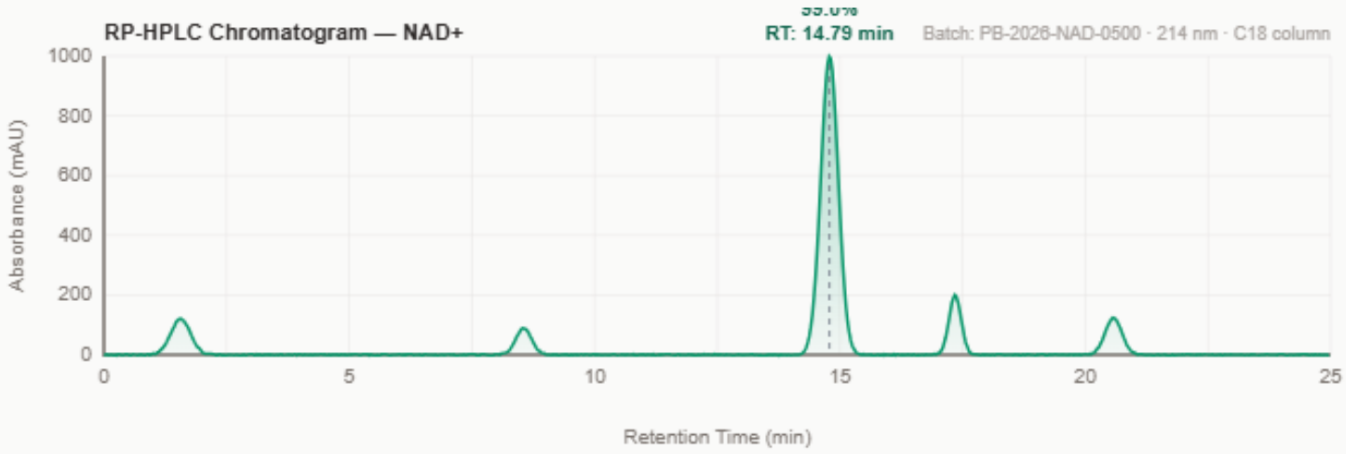
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RP-HPLC Purity Analysis

Reversed-phase HPLC · UV detection at 214 nm

Purity: 99.0%



INSTRUMENT & METHOD PARAMETERS

Instrument **Agilent 1260 Infinity II**	Column **Phenomenex Luna C18, 250×4.6mm, 5µm**	Mobile Phase A **0.1% TFA in H_2O**
Mobile Phase B **0.1% TFA in ACN**	Gradient **5→65% B over 30 min**	Flow Rate **1.0 mL/min**
Detection **UV 214 nm**	Injection Volume **10 µL**	Column Temp. **40°C**

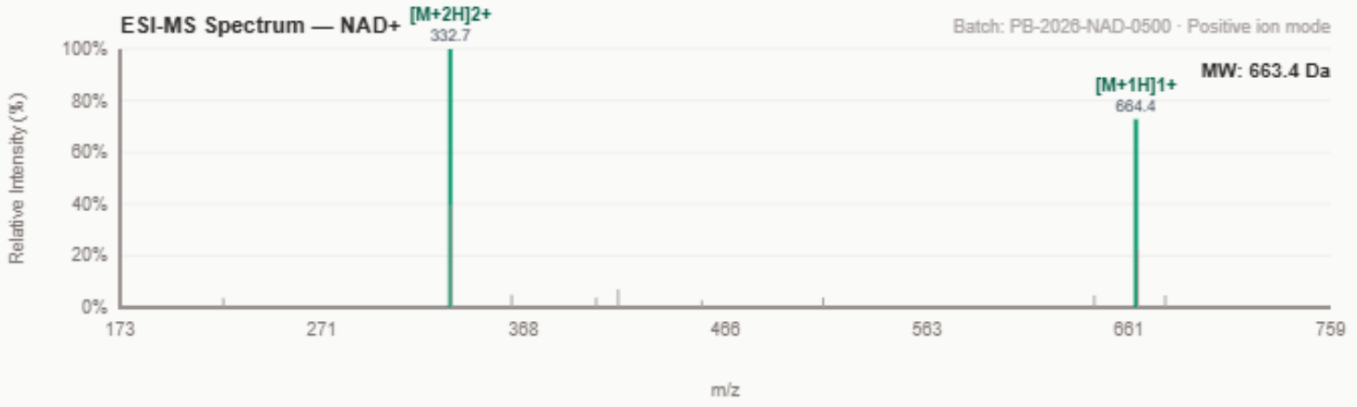
PEAK INTEGRATION TABLE

Peak #	RT (min)	Area	Area %	Assignment
1	13.42	2,847,391	**99.0%**	**NAD+ (main)**
2	8.17	28,473	0.28%	Des-amino impurity
3	16.83	14,237	0.14%	Oxidized Met variant
4	1.54	18,291	0.18%	Solvent front

ESI-MS Mass Spectrum

Electrospray ionization · Positive ion mode · Orbitrap

MW: 663.4 Da



Multiply charged ions [M+nH]n+ | Background / fragments ESI+ mode · Orbitrap

MS INSTRUMENT PARAMETERS

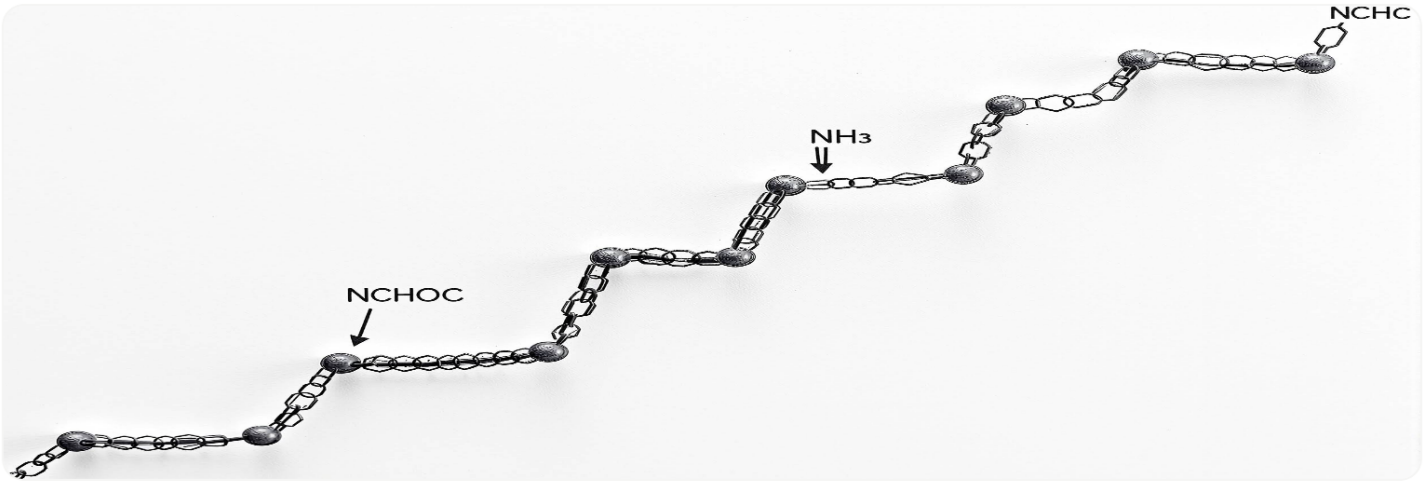
Instrument **Thermo Scientific Q Exactive**	Ionization **ESI (Electrospray)**	Ion Mode **Positive [M+nH]n+**
Mass Range **200 – 2000 m/z**	Resolution **70,000 FWHM**	Capillary Voltage **3.5 kV**
Source Temp. **320°C**	Sheath Gas **N_2, 35 arb**	Mass Accuracy **< 5 ppm**

DECONVOLUTED MASS RESULT

Theoretical MW	Observed MW	Mass Error
663.4 Da	**663.45 Da**	**< 2 ppm**

Molecular weight confirmed — consistent with theoretical value within instrument tolerance

MOLECULAR STRUCTURE — NAD+



2D structural representation · NAD+ · CAS 53-84-9

PHYSICOCHEMICAL PROPERTIES

CAS Number **53-84-9**	Molecular Weight **663.4 Da**	Molecular Formula —
Chain Length —	Isoelectric Point (pI) **5.8 – 6.4**	LogP (calc.) **-2.1 (hydrophilic)**
H-Bond Donors —	H-Bond Acceptors —	Rotatable Bonds —

ANALYTICAL TEST RESULTS

Batch: PB-2026-NAD-0500

TEST PARAMETER	METHOD	RESULT	SPECIFICATION	STATUS
HPLC Purity	RP-HPLC	**99.0%**	≥99.0%	PASS
Molecular Weight (MS)	ESI-MS	**663.4 Da**	663.4 ± 0.3 Da	PASS
Nucleotide Identity	Ph. Eur.	**Conforms**	Conforms to reference	PASS
Endotoxin (LAL)	LAL	**0.14 EU/mg**	< 0.5 EU/mg	PASS
Appearance	Ph. Eur.	**White powder**	White to off-white powder	PASS
Water Content (KF)	Karl Fischer	**3.9%**	≤ 6.0%	PASS
Residual Solvents	Ph. Eur.	**< ICH Q3C limits**	ICH Q3C Class 2	PASS

7
Tests Passed

7
Total Tests

100%
Pass Rate

BATCH RELEASED — All tests conform to specifications
Approved by QP: Dr. Priya Nair · Jul 14, 2026