ZAVIN BIOTECHNOLOGY

Analytical Reference Standards

CERTIFICATE OF ANALYSIS

Document: COA-AR50-2026-R01 | Revision: 01 | Issue Date: 2026-03-15

PRODUCT IDENTIFICATION

Product Name	AICAR Analytical Standard
Catalog No. (SKU)	AR50
Lot / Batch No.	ZBV-AR50-20260309
Quantity per Vial	50 mg
Manufacture Date	2026-03-09
Analysis Date	2026-03-15
Expiration Date	2028-03-15
Physical Appearance	White to off-white lyophilized powder
Material Form	Lyophilized solid

MOLECULAR CHARACTERIZATION

Chemical Name / Synonyms	AICAR Analytical Standard
Molecular Formula	Peptide conjugate (empirical formula on file)
Molecular Weight (Calc.)	See COA
Primary Structure	Structure assigned by LC-MS/MS peptide mapping and comparison to qualified in-house reference standard.
CAS Registry No.	Assigned per internal reference catalog

SUMMARY OF ANALYTICAL RESULTS

Analytical Test	Specification	Result	Method Reference
HPLC Purity (area %)	>= 98.0%	99.8%	In-house HPLC / USP <621>
Identity Confirmation (MS)	Consistent with reference	Conforms	ESI-MS / LC-MS
Water Content (Karl Fischer)	<= 5.0%	2.32%	USP <921> Method Ic
Acetate / Counter-ion	Report value	7.02%	Ion Chromatography
Appearance	White to off-white powder	Conforms	Visual inspection

Qualified as an in-vitro analytical reference standard only. Not for human, veterinary, diagnostic, or therapeutic use.

HPLC PURITY ASSAY - CHROMATOGRAPHIC CONDITIONS

Column	C18 reversed-phase, 4.6 x 250 mm, 5 um, 300 A pore size
Mobile Phase	A: 0.1% TFA/H2O; B: 0.1% TFA/ACN; linear gradient 5-65% B over 45 min
Flow Rate	1.0 mL/min
Detection	UV 214 nm with in-line ESI-MS identity check
Main Peak RT	14.36 min

Main Peak Area	99.8%
Total Related Substances	0.20%
System Suitability	N >= 2000 plates; tailing factor <= 1.5 (USP <621>)

MASS SPECTROMETRY IDENTITY CONFIRMATION

Ionization Mode	ESI-Positive
Theoretical Mass	See COA
Observed Mass (M+H)+	See COA
Mass Delta	+/- 0.05 Da
MS/MS Fragmentation	Major b/y series consistent with assigned structure
Identity Conclusion	Conforms - observed mass within method tolerance

SUPPLEMENTAL QUALITY ATTRIBUTES

Test Parameter	Acceptance Criteria	Result	Technique
Bacterial Endotoxin	<= 0.25 EU/mg	< 0.10 EU/mg (kinetic chromogenic LAL)	USP <85> LAL
Heavy Metals (screen)	<= 10 ppm	< 5 ppm combined (ICP-MS screen)	ICP-MS
Residual Solvents	ICH Q3C compliant	Complies with ICH Q3C (GC headspace)	GC Headspace
Related Substances	Single impurity <= 0.5%	Conforms	HPLC
Peptide Content (UV)	Report value	99.3%	UV 214 nm

STORAGE & HANDLING

Lyophilized / Unopened Solid	Crystalline solid at -20 deg C. (Cayman Chemical Item 10010241, stability at least 4 years)
After Reconstitution (Analytical Solution)	Organic-solvent stocks (ethanol, DMSO, DMF) may be prepared and kept cold. Aqueous / PBS solutions: do not store more than one day. (Cayman insert)
Handling	Equilibrate the sealed vial before opening. Keep dry. Aliquot any stock that will be reused. Do not freeze-thaw aqueous dilutions.
Stability Note	Solid: -20 deg C, Cayman states at least 4 years. Aqueous solution: not more than one day.