

CERTIFICATE OF ANALYSIS
U-[13C17]-Aflatoxin G1 in Acetonitrile LCMS grade

This document is designed, and the certified values and uncertainty are determined in accordance with ISO Guide 31, ISO Guide 34, ISO Guide 35, AOAC, and Eurachem/CITAC Guides.

Description of the Reference Material (RM)

Product name:	U-[13C17]-Aflatoxin G1				
Product number:	FIA000112				
CAS number:	U-[13C17]-Aflatoxin G1	1217444-07-9			
Lot number:	AFG113C18052102				
Expiry date:	21-May-2027				
Certified value (s):	U-[13C17]-Aflatoxin G1	0,51	±	0,01	µg/mL
Isotope incorporation by mass spectrometry 13C/Molecule	U-[13C17]-Aflatoxin G1	96,9%			
Physical description:	Clear solution of toxin in Acetonitrile LCMS grade				
Packing	Amber glass vial filled with 0,5 mL of solution				
Storage conditions	≤ -10°C				
Matrix and starting material:	This material was prepared with/from:				
	Acetonitrile LCMS Grade	Batch:		0001204102BS	
	U-[13C17]-Aflatoxin G1	Internal ID:		SS-AFG113C-17071101	

Intended use of the RM:

For laboratory use for R&D purposes only. The main purpose of this material is for analytical instrument calibration (e. g. external calibration, standard addition). Not for drug, household or other uses.

Instruction for the correct use of the RM:

The vial should be stored in a dark place at ≤ -10°C . Before usage of the RM, allow the vial to warm to room temperature. The expiry date of this RM is based on the current knowledge and holds only for proper storage conditions in the originally closed vials / packages. Solutions prepared for calibration purpose should be protected from exposure to light. Discard solutions after use in accordance with appropriate safety regulations for chemical substances.

Hazardous situation:

H225 : Flammable liquid - Category 2 - Highly flammable liquid and vapour

H302 : Acute toxicity - Oral - Category 4 - Harmful if swallowed

H312 : Acute toxicity - Dermal - Category 4 - Harmful in contact with skin

H319 : Eye irritation - Category 2 - Causes serious eye irritation

H332 : Acute toxicity - Inhalation - Category 4 - Harmful if inhaled

In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). Avoid exposure. Wear suitable protective clothing.

Safety measures:

Special care must be taken when manipulating this standard. Avoid contact with eyes, skin and clothing. Avoid prolonged or repeated exposure. Use only in a chemical fume hood. Safety shower and eye bath must be near. In case of spills, cover and absorb with an inert dry material such as dry-lime, sand or soda ash and place in an appropriate waste disposal container.

Keep container tightly closed. Do not store in direct sunlight. Keep away from heat, sparks, flame and incompatible material. Storage area should be cool, dry and away from incompatible materials.

Further information:

Further information is available in the SDS available online (downloading page: www.fianovis.com/documentation (documentation section)). End users should conduct their own investigations to determine the suitability of the information for their particular research purposes. Under no circumstances will the supplier of this RM be held responsible for any damage resulting from handling or contact with the product.

Traceability

The values are based on the chromatographic determination of the concentration of the stock solution. The chromatographic assay method was demonstrated to be selective through validation of the analytical method. Pipette calibration is verified by an accredited external calibration service. Production is carried out with specially dedicated glassware. Only Class A glassware is used for volumetric measurements.

Calculation of certified values and associated uncertainties

This calibrant is certified on solution preparation. Mass concentration calculation is based on certified concentration and dilution step. Toxin is pipetted and diluted in Acetonitrile LCMS grade.

$$C (\mu\text{g/mL}) = \frac{C_{ss} \times V_p}{V_D}$$

Toxin	Source				Standard uncertainty
U-[13C17]-Aflatoxin G1	Liquid solution C _{ss}	concentration	436,48	μg/mL	0,28
	Volumetry procedure V _p	volume	0,06	mL	0,00
	Dilution V _D	volume	50,00	mL	0,06
$\text{Combined}_u = \sqrt{\left(\frac{u_p}{P}\right)^2 + \left(\frac{u_{cm}}{V_{cm}}\right)^2 + \left(\frac{u_{vp}}{V_p}\right)^2 + \left(\frac{u_{v1}}{V_1}\right)^2}$					0,00
$\text{Concentration}_{\text{Toxin}} = \frac{\text{Concentration mother}}{V_{D1}}$					μg/mL
Total expanded uncertainty (using a coverage factor k=2)					0,01

Notes: The purity of the mycotoxin used for this RM was determined by liquid chromatography. Following the Guide to the Expression of Uncertainty in measurement (GUM) the expanded uncertainty of toxin level is obtained by multiplication with a coverage factor K for which 2 is usually chosen to obtain a confidence level of 95 %.

Carbon 13 calculation

Isotopic incorporation	
Compound	Isotopic distribution
¹³ C ₁₄ Aflatoxin G1	1,2%
¹³ C ₁₅ Aflatoxin G1	4,5%
¹³ C ₁₆ Aflatoxin G1	35,6%
¹³ C ₁₇ Aflatoxin G1	58,6%
Calculated isotopic incorporation (¹³C/molecule)	96,9%

The calculation are based on LC-MS/MS data

Quality control

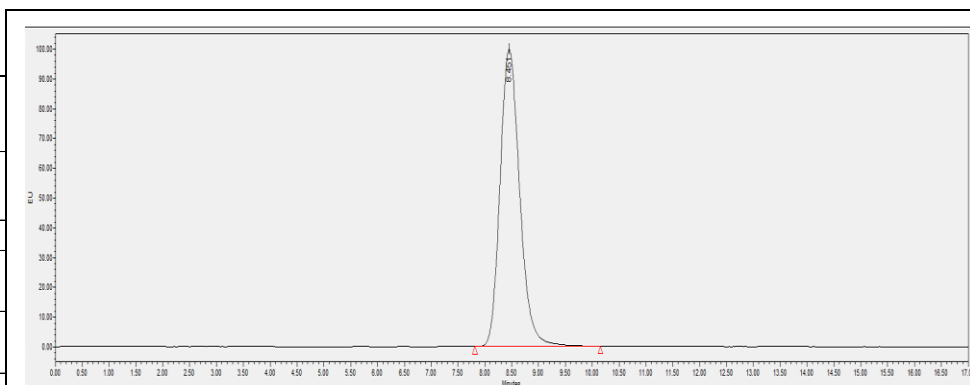
Confirmation of the certified concentration by HPLC-FLD & cell

The certified concentrations of the prepared solution was confirmed by HPLC-FLD & cell against a reference batch.

Chromatogram

Chromatographic conditions:

Column :	InertSustain C18 250 x 4,6 mm 5 μm		
Mobile phase :	MeOH / H ₂ O + HNO ₃ +KBr / Isocratic : 35%A / 65%B		
Flow (mL/min) :	1,80		
Temperature (°C) :	50,00		
Detector :	FLD with post-column electrochemical with bromide using FARLIB® ECD Cell		
U-[13C17]-Aflatoxin G1	0,53	± 0,01	μg/mL
Mean of 0 replicates measurement against reference batch, confidence interval with P = 95%			



Chromatogram of Toxin

References:

- a-ISO GUIDE 31:2015, Reference Materials - Contents of certificates, labels and accompanying documentation.
- b-ISO GUIDE 34:2009, General requirements for the competence of reference material producers
- c-ISO GUIDE 35:2006, Reference materials - General and Statistical Principles.
- d-ISO/IEC Guide 98-3:2008 Uncertainty of measurement-Part 3 : Guide to the expression of uncertainty in measurment (GUM:1995)
- e-Eurachem/CITAC guide (2019), Traceability in Chemical Measurement.
- f-Eurachem/CITAC guide (2012), Quantifying Uncertainty in Analytical Measurement.
- g-AOAC Official Method 970.44-1971 - Preparation of Standards for Mycotoxins.

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