


CERTIFICATE OF ANALYSIS
U-[13C17]-Aflatoxin G2 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 G2		
	Product number:	FIA000116		
	CAS number:	U-[13C17]-Aflatoxin G2	1217462-49-1	
	Lot number:	AFG213C17022202		
	Expiry date:	20-Feb-2026		
	Certified value (s):	U-[13C17]-Aflatoxin G2	0,50 ± 0,05	µg/mL
	Isotope incorporation by mass spectrometry 13C/Molecule	U-[13C17]-Aflatoxin G2	97,2%	
	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 UPLC/MS	Batch:	1204102BS	
	U-[13C17]-Aflatoxin G2	Internal ID:	SS-AFG213C-16122103	

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 MSDS provided along with this certificate. Final users should make their own investigations to determine the suitability of the information for their particular research purposes. In no event the supplier of this RM shall be held liable for any damage resulting from handling or from contact with the product.

Traceability

The certified values are based on the results of analytical techniques previously used for purity assessment of solid mycotoxins. High purity material represents a practical realization of concentration units, through conversion of mass to molar quantity.

Calculation of certified values and associated uncertainties

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

The pipet was calibrated with traceability to national and international standards (Dakks & ilac-MRA). All weights used for metrological control are connected to national and international standards. The weights are calibrated by an accredited laboratory.

$$C (\mu\text{g/mL}) = \frac{m \times P}{V}$$

Toxin	Source				Standard uncertainty
U-[13C17]-Aflatoxin G2	Purity		100,00	%	0,00
	Liquid solution	concentration	31,40	$\mu\text{g/mL}$	1,33
	Volumetry procedure	volume	0,16	mL	0,01
	Dilution	volume	10,00	mL	0,01
$\text{Combined}_u = \sqrt{\left(\frac{u_P}{P}\right)^2 + \left(\frac{u_{cm}}{V_{cm}}\right)^2 + \left(\frac{u_{Vp}}{V_p}\right)^2 + \left(\frac{u_{V1}}{V_1}\right)^2}$					0,02
$\text{Concentration}_{\text{Toxin}} = \frac{\text{Concentration mother}}{V_{D1}}$					$\mu\text{g/mL}$
Total expanded uncertainty (using a coverage factor k=2)					0,05

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 G2	0,0%
¹³ C ₁₅ Aflatoxin G2	0,0%
¹³ C ₁₆ Aflatoxin G2	38,0%
¹³ C ₁₇ Aflatoxin G2	62,0%
Calculated isotopic incorporation (¹³C/molecule)	97,2%

The calculation are based on LC-MS/MS data

Quality control

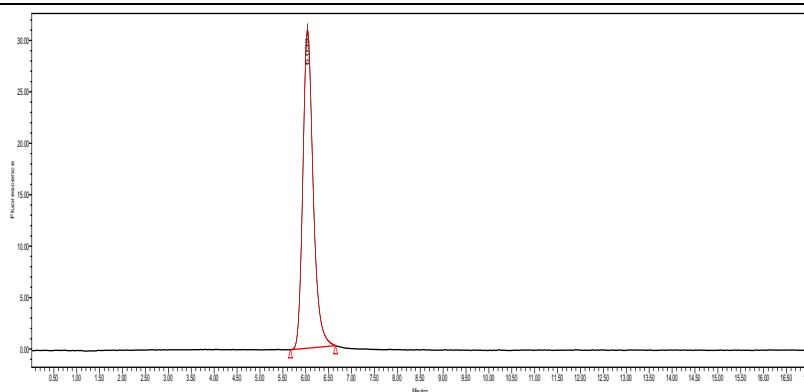
Confirmation of the certified concentration by HPLC-FLD & cell

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 mm5 μm		
Mobile phase:	MeOH / H2O + HNO3 +KBr		
Flow mL/min:	1,80		
Temperature °C:	50,00		
Detector	FLD with post-column electrochemical with bromide using FARLIB® ECD Cell		
U-[13C17]-Aflatoxin G2	0,54	\pm 0,01	$\mu\text{g/mL}$
Mean of 5 replicates measurement against reference batch, confidence interval with P = 95%			



Chromatogram of Toxins

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 measurement (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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Quality Control

Date: 08-Jul-24