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LABORATORY NUMBER: Available to participants from FAPAS SecureWeb

FAPAS® Proficiency Test 04165

Aflatoxins B & G in Almonds

October-November 2010

Report

Prepared and authorised on behalf of FAPAS by

Dominic Anderson

0009 PT

SUMMARY

1. The test material for FAPAS® proficiency test 04165 was dispatched in October 2010. Each participant received an almond test material to be analysed for aflatoxins B_1, B_2, G_1, G_2 and/or total aflatoxin (AFB_1, AFB_2, AFG_1, AFG_2, total AF).

2. For each analyte, an assigned value (x_a) was determined. In conjunction with the standard deviation for proficiency (σ_p), a z-score for each result was calculated.

3. Results for this proficiency test are summarised as follows:

analyte	assigned value, x_a µg/kg	number of scores, $\|z\| \leq 2$	total number of scores	% $\|z\| \leq 2$
AFB_1	7.87	46	52	88
AFB_2	0.48	44	49	90
AFG_1	1.04	42	50	84
AFG_2	0.46	42	49	86
Total AF	9.94	47	53	89

4. Surplus test materials are available for sale, see APPENDIX II.

5. Whereas this report has been produced in good faith and in accordance with best industry practice, neither the Food and Environment Research Agency nor the Secretary of State for Environment, Food and Rural Affairs accepts any liability whatsoever as to the application or use of the information contained therein.

CONTENTS

1. INTRODUCTION

1.1. Proficiency Testing

Proficiency testing aims to provide an independent assessment of the competence of participating laboratories. Together with the use of validated methods, proficiency testing is an essential element of laboratory quality assurance.

Further details of the FAPAS® proficiency testing scheme is available in our protocols [1, 2].

2. TEST MATERIAL

2.1. Preparation

Sample preparation was carried out by a laboratory contracted to do so by FAPAS®.

Almonds were procured from a retail source and screened; the sample was found to contain no detectable aflatoxins B or G.

The test material was prepared using an almond/water mix to produce a slurry. This was then spiked with a solution of AFB_1, AFB_2, AFG_1 and AFG_2 in acetonitrile and blended.

Samples were stored at -20°C until dispatch.

2.2. Homogeneity

To test for homogeneity, randomly selected test materials were analysed in duplicate by a laboratory contracted to do so by FAPAS®.

These data showed sufficient homogeneity, and were not included in the subsequent calculation of the assigned values.

2.3. Dispatch

The start date was 12 October 2010. Test materials were sent to 58 participants.

3. RESULTS

The instructions for reporting results were as follows:

- Determine the level of aflatoxins B_1, B_2, G_1, G_2 and/or total aflatoxin, present in the test material, in **µg/kg, as received, corrected for recovery**.

Results were submitted by 55 participants (95%) before the closing date for this test, 25 November 2010.

Each participant was given a laboratory number, assigned in order of receipt of results. The reported analyte concentrations are given in Table 1.

Participants' comments are given in Table 2.

The analytical methods used by each participant are summarised in APPENDIX I.

4. STATISTICAL EVALUATION OF RESULTS

The results submitted by participants were statistically analysed in order to provide an assigned value for each analyte. In combination with the standard deviation for proficiency, σ_p, a z-score was calculated for each result. The procedure follows that recommended in the IUPAC International Harmonised Protocol for the Proficiency Testing of Analytical Chemistry Laboratories [3].

Further details on the procedure followed can be found in the relevant protocols [1, 2].

4.1. Calculation of the Assigned Value, x_a

The assigned value, x_a, was set as the consensus of the results submitted by participants.

The following results were excluded from the calculation of the assigned value:

i) results reported as approximately 10, 100 or 1000 × greater or smaller than the majority of submitted results (as these were considered to be reporting errors).

ii) results reported in a semi-quantitative format e.g. <0.5.

iii) results from participants not quoting a percentage recovery, EXCEPT for total AF, where participants submitted results that were the sum of their recovery corrected individual aflatoxins.

For all analytes, this procedure was straightforward and the robust mean was chosen as the assigned value.

The assigned values for all analytes are shown in Table 3.

4.2. Standard Deviation for Proficiency, σ_p

The standard deviation for proficiency, σ_p, was set at a value that reflects best practice for the analyses in question.

For all analytes, σ_p was derived from the appropriate form of the Horwitz equation [4].

The values for σ_p used to calculate z-scores from the reported results of this test are given in Table 3

4.3. Individual z-Scores

Participants' z-scores were calculated as:

$$z = \frac{(x - x_a)}{\sigma_p}$$

where x = the participant's reported result,
x_a = the assigned value
and σ_p = the standard deviation for proficiency.

Participants' z-scores for all analytes are given in Table 1 and shown as histograms in Figures 1–5. It is possible for the z-scores published in this report to differ slightly from the z-score that can be calculated using the formula given above. These differences arise from the necessary rounding of the actual assigned values and standard deviations for proficiency prior to their publication in Table 3.

The number and percentage of z-scores in the range $-2 \leq z \leq 2$ for all analytes are given in Table 4.

5. ASSESSMENT OF SCORES

In normal circumstances, over time, about 95% of z-scores will lie in the range $-2 \leq z \leq 2$. Occasional scores in the range $2 < |z| < 3$ are to be expected, at a rate of 1 in 20. Whether or not such scores are of importance can only be decided by considering them in the context of the other scores obtained by that laboratory.

Scores where $|z| > 3$ are to be expected at a rate of about 1 in 300. Given this rarity, such z scores very strongly indicate that the result is not fit-for-purpose and almost certainly requires investigation.

The consideration of a set or sequence of z-scores over time provides more useful information than a single z-score. Examples of suitable methods of comparison are provided in the IUPAC International Harmonised Protocol for the Proficiency Testing of Analytical Chemistry Laboratories [3].

6. REFERENCES

1 FAPAS, 2010, Protocol for Proficiency Testing Schemes, Part 1 – Common Principles, Version 2, Issued December 2010.

2 FAPAS, 2009, Protocol for Proficiency Testing Schemes, Part 2 – FAPAS®, Revision 2009, Version 1, Issued November 2009.

3 Thompson, M., Ellison, S.L.R. and Wood, R., 2006, The International Harmonised Protocol for the Proficiency Testing of Analytical Chemistry Laboratories, *Pure Appl. Chem.*, **78**, No. 1, 145–196.

4 Thompson, M., 2000, Recent trends in inter-laboratory precision at ppb and sub-ppb concentrations in relation to fitness for purpose criteria in proficiency testing, *Analyst*, **125**, 385-386.

Table 1: Results and z-Scores

laboratory number	analyte														
	AFB_1			AFB_2			AFG_1			AFG_2			total AF		
	assigned value	7.87	µg/kg	assigned value	0.48	µg/kg	assigned value	1.04	µg/kg	assigned value	0.46	µg/kg	assigned value	9.94	µg/kg
	result µg/kg	recovery %	z-score	result µg/kg	recovery %	z-score	result µg/kg	recovery %	z-score	result µg/kg	recovery %	z-score	result µg/kg	recovery %	z-score
001	7.8	uncorr	0.0	0.5	uncorr	0.1	0.9	uncorr	-0.6				9.2	uncorr	-0.3
002													12	uncorr	0.9
003	6.00	uncorr	-1.1												
004	6.1	120	-1.0	<0.5	116		1.0	108	-0.2	0.5	117	0.4	7.6	N.A	-1.1
005	5.7	116	-1.3	0.3	120	-1.7	0.7	102	-1.5	0.3	111	-1.6	7.0		-1.3
006	6.47	100	-0.8	.45	100	-0.3	1.06	100	0.1	.46	100	0.0	8.44	100	-0.7
007	8.548	uncorr	0.4	0.486	uncorr	0.0	1.053	uncorr	0.1	0.347	uncorr	-1.1	10.434	uncorr	0.2
008	9.7	82	1.1	0.50	88	0.1	1.18	80	0.6	0.65	60	1.8	12.0		0.9
009	4.49	88	-2.0	0.15	88	**-3.1**	0.35	88	**-3.0**	0.20	88	**-2.6**	5.19	88	**-2.2**
010	6.05	uncorr	-1.1	0.39	uncorr	-0.9	0.85	uncorr	-0.8	0.39	uncorr	-0.7	7.68	uncorr	-1.0
011	7.48	94	-0.2	0.45	104	-0.3	0.99	104	-0.2	0.42	86	-0.4	9.34	97	-0.3
012	7.5705	89.7	-0.2	0.5012	89.7	0.2	0.6274	89.7	-1.8	1.1783	89.7	**7.0**	9.8778	89.7	0.0
013	5.17	0.57, 110%	-1.6	0.31	0.54, 110%	-1.6	0.52	0.59, 120%	**-2.3**	0.26	0.50, 100%	-2.0	6.26	2.20, 110%	-1.7
014	11.66	56	**2.2**	0.42	74	-0.6	0.95	90	-0.4	0.28	51	-1.8	13.31		1.5
015	8.17	71.8	0.2	0.45	79.7	-0.3	0.96	63.9	-0.3	0.4	67.8	-0.6	9.98	70.8	0.0

z-scores outside |z| >2 are shown in **bold,** see Section 5 uncorr = participant did not state recovery %

Table 1 (continued): Results and z-Scores

laboratory number	analyte														
	AFB_1			AFB_2			AFG_1			AFG_2			total AF		
	assigned value	7.87	µg/kg	assigned value	0.48	µg/kg	assigned value	1.04	µg/kg	assigned value	0.46	µg/kg	assigned value	9.94	µg/kg
	result µg/kg	recovery %	z-score	result µg/kg	recovery %	z-score	result µg/kg	recovery %	z-score	result µg/kg	recovery %	z-score	result µg/kg	recovery %	z-score
016	6.2	96.2	-1.0	0.4	97.2	-0.8	0.9	98.1	-0.6	0.3	97.3	-1.6	7.7	97.3	-1.0
017	3.77	uncorr	**-2.4**	0.27	uncorr	-2.0	0.56	uncorr	**-2.1**	0.29	uncorr	-1.7	4.89	uncorr	**-2.3**
018	13.63	63	**3.3**	0.52	98	0.3	1.45	91	1.8	0.56	90	1.0	16.16		**2.8**
019	27	uncorr	**11.0**	2.1	uncorr	**15.2**	4.0	uncorr	**13.0**	1.8	uncorr	**13.1**	35	uncorr	**11.5**
020	7.98	86.61	0.1	0.47	85.94	-0.1	1.08	84.84	0.2	0.42	76.02	-0.4	9.95	84.66	0.0
021	7.61	91.0	-0.2	0.486	93.2	0.0	0.978	94.1	-0.3	0.459	89.4	0.0	9.53	91.9	-0.2
022	7.69	100	-0.1	0.466	97	-0.2	0.944	99	-0.4	0.356	78	-1.1	9.46	93.5	-0.2
023	6.01	80	-1.1												
024													9.3	100	-0.3
025	8.39	77	0.3	0.61	76	1.2	1.19	77	0.7	0.41	71	-0.5	10.84	75	0.4
026	5.95	uncorr	-1.1	0.69	uncorr	1.9	1.62	uncorr	**2.5**	1.27	uncorr	**7.9**	9.53	uncorr	-0.2
027	8.34	95	0.3	0.64	99	1.5	1.18	99	0.6	0.52	78	0.6	10.68		0.3
028	10.22	87	1.4	0.67	84	1.7	1.37	92	1.5	0.58	94	1.1	12.84		1.3
029	6.51	81.7	-0.8	0.33	80.4	-1.4	0.67	85.0	-1.6	0.34	82.1	-1.2	7.85		-1.0
030	9.75	uncorr	1.1	0.72	uncorr	**2.2**	1.17	uncorr	0.6	0.53	uncorr	0.7	12.17	uncorr	1.0

z-scores outside |z| >2 are shown in **bold,** see Section 5 uncorr = participant did not state recovery %

Table 1 (continued): Results and z-Scores

laboratory number	analyte														
	AFB_1			AFB_2			AFG_1			AFG_2			total AF		
	assigned value	7.87	µg/kg	assigned value	0.48	µg/kg	assigned value	1.04	µg/kg	assigned value	0.46	µg/kg	assigned value	9.94	µg/kg
	result µg/kg	recovery %	z-score	result µg/kg	recovery %	z-score	result µg/kg	recovery %	z-score	result µg/kg	recovery %	z-score	result µg/kg	recovery %	z-score
031	7.57	94.0	-0.2	0.48	88.4	0.0	1.29	114.1	1.1	0.53	100.4	0.7	9.87	97.2	0.0
032	7.95	78.56	0.0	0.50	85.05	0.1	1.48	74.04	1.9	0.56	71.71	1.0	10.49	76.80	0.3
033	8.45	84	0.3	0.47	85	-0.1	1.19	86	0.7	0.54	53	0.8	10.66		0.3
034	7.32	104.1	-0.3	0.47	101.3	-0.1	1.00	100.1	-0.2	0.46	100.9	0.0	9.24		-0.3
035													6.0	uncorr	-1.8
036	10.69	uncorr	1.6	0.60	uncorr	1.1	1.39	uncorr	1.5	0.67	uncorr	2.0	13.35	uncorr	1.6
037	8.4	93.5	0.3	0.5	87.9	0.1	1.0	96.7	-0.2	0.6	60.6	1.3	10.5		0.3
038	8.30	92	0.2	0.52	82.8	0.3	0.93	95.8	-0.5	0.57	64.5	1.0	10.32		0.2
039	7.62	uncorr	-0.1	0.55	uncorr	0.6	1.38	uncorr	1.5	0.60	uncorr	1.3	10.15	uncorr	0.1
040	6.15	85.2	-1.0	0.36	86.3	-1.2	0.74	73.8	-1.3	0.30	80.0	-1.6	7.55	80.8	-1.1
041	7.36	99.5	-0.3	0.47	90.3	-0.1	0.92	93.3	-0.5	0.51	48.7	0.5	9.26		-0.3
042	15.12	93.5	**4.2**	0.94	93.5	**4.3**	2.70	93.5	**7.3**	0.56	93.5	1.0	19.32	93.5	**4.3**
043	14.684	101.61	**3.9**	0.809	101.36	**3.1**	2.059	101.02	**4.5**	0.719	77.89	**2.5**	18.27	100.60	**3.8**
044	7.32	92.65	-0.3	0.40	102.28	-0.8	1.12	97.49	0.4	0.35	84.87	-1.1	9.19	93.75	-0.3
045	7.4	78	-0.3	0.5	81	0.1	0.9	73	-0.6	0.4	65	-0.6	9.2	74	-0.3

z-scores outside |z| >2 are shown in **bold,** see Section 5 uncorr = participant did not state recovery %

Table 1 (continued): Results and z-Scores

laboratory number	analyte														
	AFB_1			AFB_2			AFG_1			AFG_2			total AF		
	assigned value	7.87	µg/kg	assigned value	0.48	µg/kg	assigned value	1.04	µg/kg	assigned value	0.46	µg/kg	assigned value	9.94	µg/kg
	result µg/kg	recovery %	z-score	result µg/kg	recovery %	z-score	result µg/kg	recovery %	z-score	result µg/kg	recovery %	z-score	result µg/kg	recovery %	z-score
046	6.93	100	-0.5	0.40	100	-0.8	0.84	100	-0.9	0.43	100	-0.3	8.60	100	-0.6
047	8.65	81	0.4	0.56	81	0.7	1.14	87	0.4	0.53	84	0.7	10.88	83	0.4
048	8.6	92	0.4	0.6	88	1.1	1.2	93	0.7	0.5	115	0.4	10.9		0.4
049	5.76	89	-1.2	0.38	96	-1.0	0.78	94	-1.1	0.32	105	-1.4	7.02	94	-1.3
050	7.66	88.5	-0.1	0.36	88.5	-1.2	0.78	89.4	-1.1	0.21	65.7	**-2.5**	8.8		-0.5
051	8.0	81.8	0.1	0.50	85.7	0.1	0.81	80.9	-1.0	0.39	84.1	-0.7	9.7		-0.1
052	6.84	112,50	-0.6	0.41	111,67	-0.7	0.96	111,00	-0.3	0.41	83,33	-0.5	8.63	108,46	-0.6
053	8.13	59.9	0.1	0.54	72.9	0.5	1.72	66.1	**3.0**	0.75	51.5	**2.8**	11.14		0.5
054	10.5727	100	1.6	0.6023	100	1.1	1.1728	100	0.6	0.5151	100	0.5	12.8629	101.9% (of in-house spiked sample)	1.3
055	9.34	61.9	0.8	0.59	82.2	1.0	1.15	85.3	0.5	0.58	61.9	1.1	11.66	80.7	0.8

z-scores outside |z| >2 are shown in **bold,** see Section 5 uncorr = participant did not state recovery %

Table 2: Participants' Comments

participant number	Comment
001	G2 as internal standard
013	Percent recovery for Matrix Spike based on a dilution factor of 2 (no additional correction needed).
019	Recovery 90% results not corrected
039	results are not corrected for recovery
041	The total extraction volume is 210 mL of the extraction solvent plus 40 mL of the liquid from 90 grams of the slurry which adds up to 250 mL
050	0.21 µg/kg is the LOD of Aflatoxin G2.
054	Corrections based on in-house spike recoveries. Total aflatoxin recovery not adjusted.

comments are as submitted by participants

Table 3: Assigned Values and Standard Deviations for Proficiency

analyte	assigned value, x_a, µg/kg			standard deviation for proficiency, µg/kg	
	data points, n	robust mean	uncertainty, u	derived from	σ_p
AFB_1	41	7.87	0.242	Horwitz [4]	1.73
AFB2	39	0.48	0.016	Horwitz [4]	0.106
AFG1	40	1.04	0.041	Horwitz [4]	0.228
AFG2	40	0.46	0.021	Horwitz [4]	0.102
total AF	41	9.94	0.310	Horwitz [4]	2.19

Table 4: Number and Percentage of z-Scores where $|z| \leq 2$

analyte	number of scores where $\|z\| \leq 2$	total number of scores	% $\|z\| \leq 2$
AFB_1	46	52	88
AFB_2	44	49	90
AFG_1	42	50	84
AFG_2	42	49	86
total AF	47	53	89

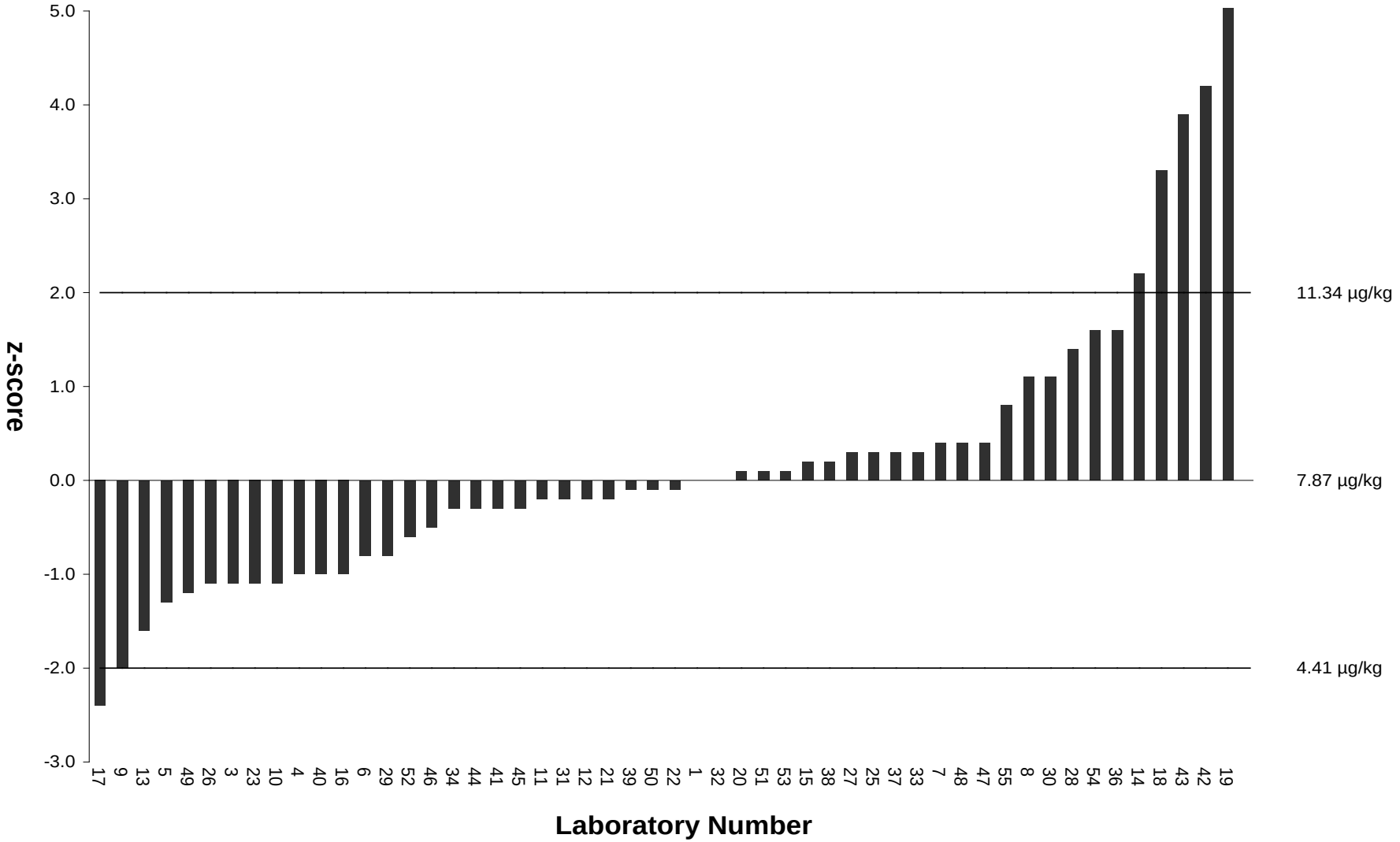

Figure 1: z-Scores for Aflatoxin B_1

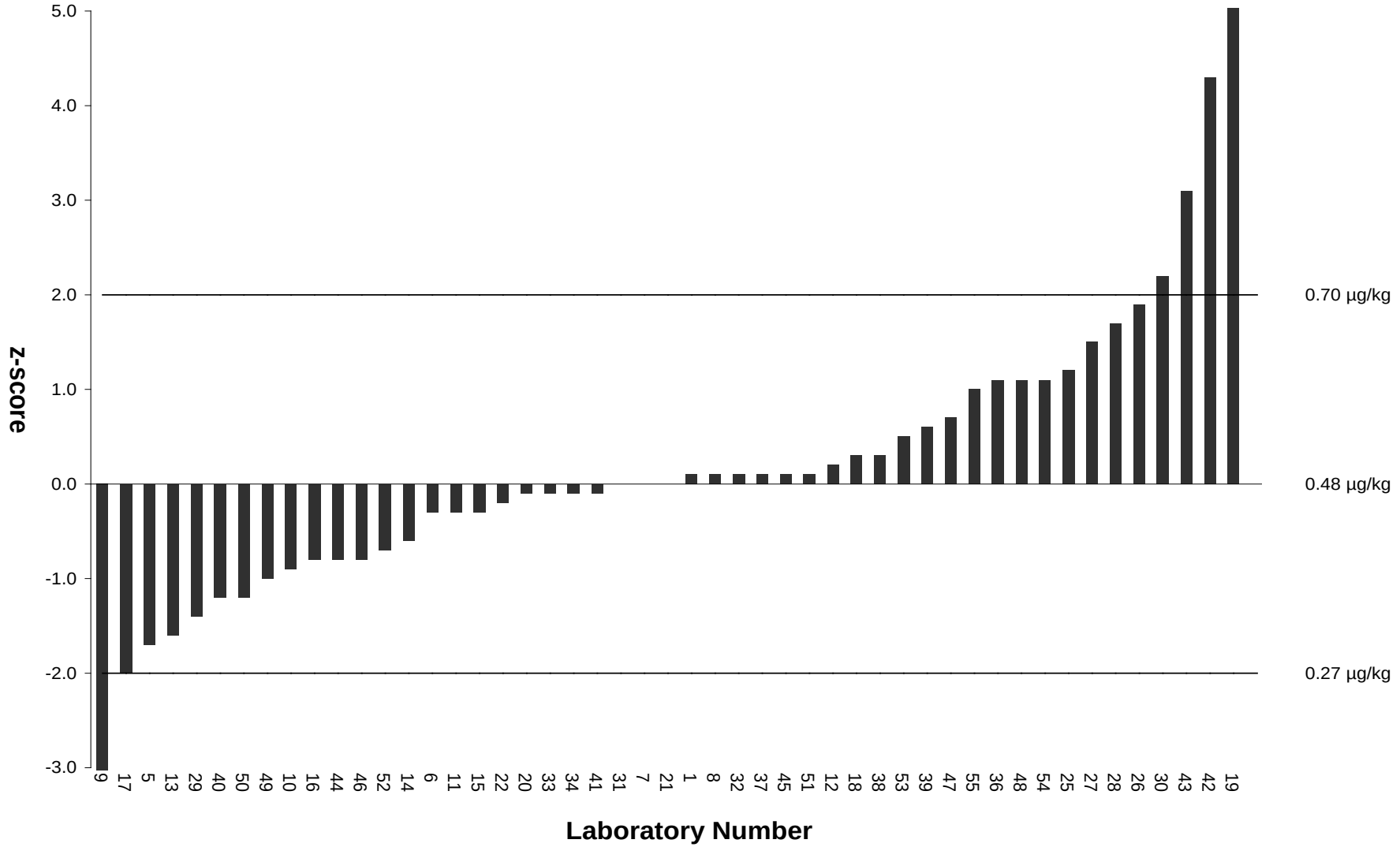

Figure 2: z-Scores for Aflatoxin B_2

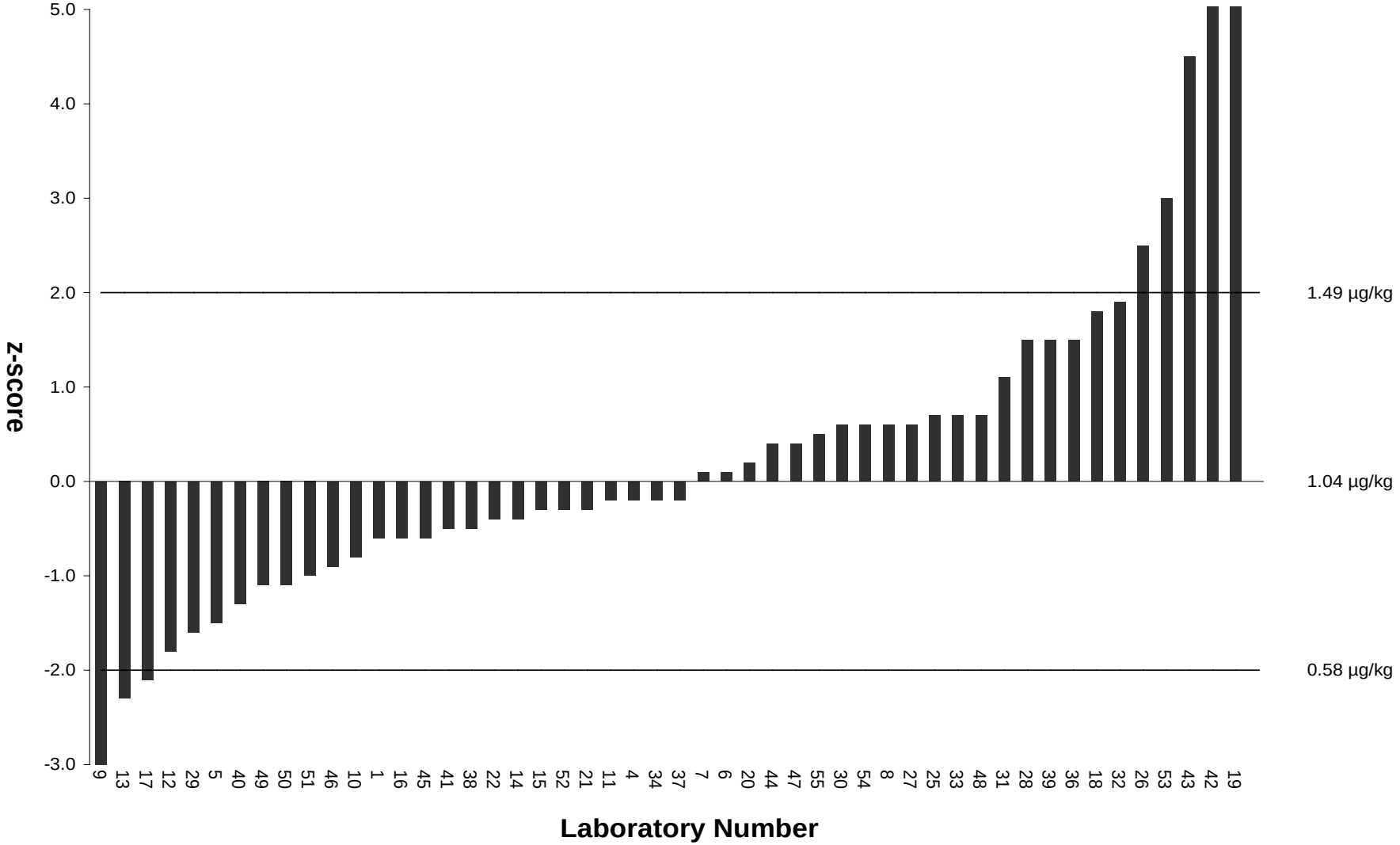

Figure 3: z-Scores for Aflatoxin G_1

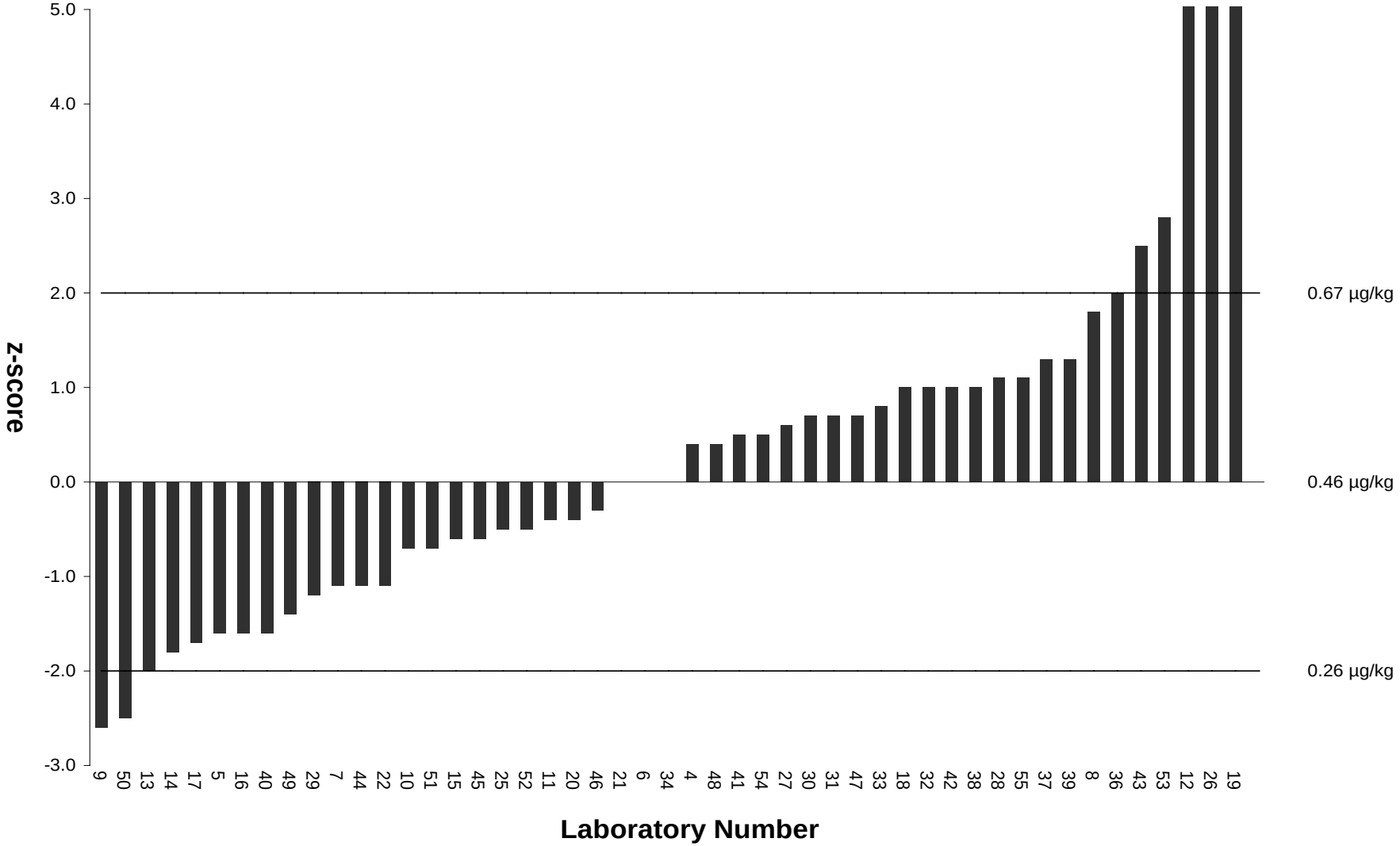

Figure 4: z-Scores for Aflatoxin G_2

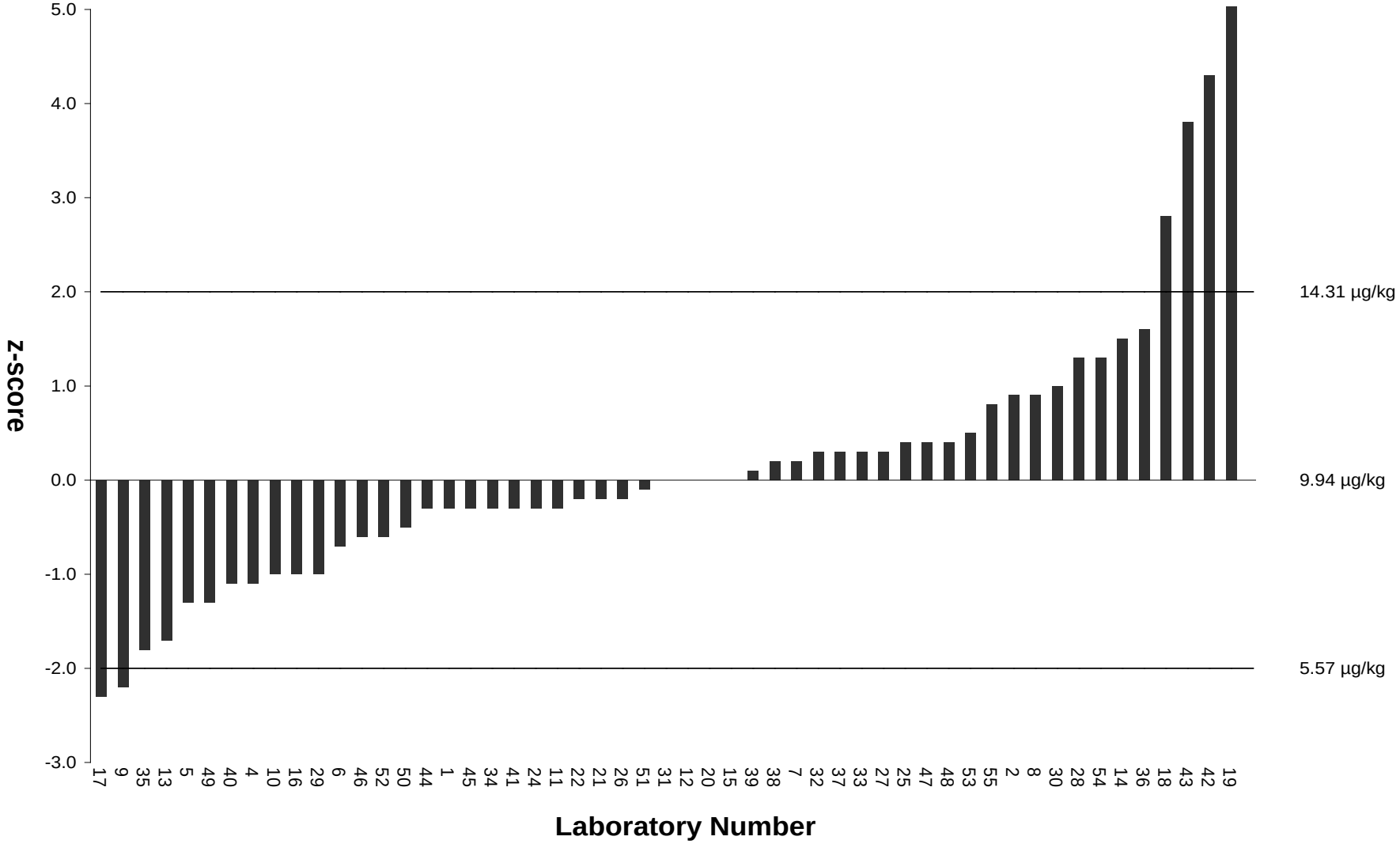

Figure 5: z-Scores for Total Aflatoxin

APPENDIX I: Analytical Methods Used by Participants

Methods are tabulated according to the information supplied by participants, but some responses may have been combined or edited for clarity.

Accredited Method Used	laboratory number
yes	002 004 006 007 008 009 011 012 013 015 016 018 019 020 021 022 023 026 029 031 032 034 035 037 039 040 041 043 044 045 047 048 049 050 052 054 055
no	030 033 036 046 053

Reference	laboratory number
§ 64 LFGB Method 2004 L-23.05-2	039
AFNOR NF EN 14123	019
AOAC Official Methods	041 052
AOAC Official Methods 991.31	011 013 016 020 032 054
AOAC Official Methods 1991	026
AOAC Official Methods 1991 18 2005 49 p21	007
AOAC Official Methods 1991 74 81-88	049
AOAC Official Methods 2000	009
AOAC Official Methods 2000 2 17th ch 29 p23	043
AOAC Official Methods 2000 vol 2 17th Edn 34	021 022
AOAC Official Methods 2000 Vol II/ 17 th Edn 49.2.18	006
AOAC Official Methods 2003	024
AOAC Official Methods 2005 16 21-23	050
AOAC Official Methods 2006 18th 49.2.29	034
AOAC Official Methods 2010	044
EN 2001 12955	031
EN 2003	008
EN 2007 14123	048
EN 2008	033
ISO 1987 ISO 6651	010
J. Assoc. Off. Anal. Chem. 1986 VOL. 67	045
J. Assoc. Off. Anal. Chem. 1991 vol 74, no 1 81-89	002

Reference (continued)	laboratory number
KFDA 2009	029
Korea Food Code 10.6.1.1.2 2010 1155-1157	023
Manufacturer's Instructions	035 047
USDA 2000 Volume II/ 17 th Edition 49.2.18	006
USDA 2007	055

Sample Weight (g)	laboratory number
≥5 - <10	030
≥10 - <25	029 031 046 047 048 053
≥25 - <50	004 009 011 012 018 019 023 026 033 035 039 040 044 045 049 050 052 054
≥50	002 006 007 008 010 013 015 016 020 021 022 024 032 034 036 037 041 043 055

Extraction Solvent	laboratory number
acetonitrile	004 046 053
hexane	048
methanol	002 006 007 008 009 010 011 012 013 015 016 018 019 020 021 022 023 024 026 029 030 031 032 033 034 035 036 037 039 040 041 043 044 045 047 048 049 050 052 054 055
phosphate buffer	012
sodium chloride solution	029
water	002 004 006 008 009 010 011 013 015 018 019 020 023 026 030 031 032 033 034 036 037 039 040 041 043 045 046 047 048 049 050 053 055

Extraction Procedure	laboratory number
add filter aid	050
add NaCl	002 008 013 016 021 022 023 024 026 034 036 040 041 044 045 048 049 050 054 055
blend/homogenise with solvent	002 004 006 007 010 011 012 013 016 018 019 020 021 022 031 032 037 040 041 043 044 047 049 050 052 054 055
maceration/homogenisation	015 054
shake with solvent	029 033 035 039 048 053

Extraction Procedure (continued)	laboratory number
shaking	030 046
sonicate/ultrasonic bath	046
ultra turrax	008 018 036 040
vortex mix	009

Extraction Type	laboratory number
single	002 004 006 007 008 009 010 011 012 013 015 016 018 019 020 021 022 023 024 026 029 031 032 033 034 035 036 037 039 040 041 043 044 045 047 048 049 050 052 053 054 055
multiple	030

Sample Work Up	laboratory number
centrifuge	018 030 046
defatted with hexane	015
dilute	004 006 011 012 020 021 024 030 032 041 048 054
filter	002 004 006 008 009 010 011 012 013 016 018 019 020 021 022 023 026 029 031 032 033 034 035 036 037 039 040 044 047 048 049 050 053 054 055
pH adjustment	036 039
none	007 045

Sample Clean-up by Immunoaffinity Column (Brand)	laboratory number
AflaStar R	004
Coring AflaStar	031
Neogen	019
R-Biopharm Rhone	002 008 009 010 012 026 030 033 034 037 040 047
Romer Labs, Austria	039
VICAM	007 011 013 016 018 020 021 022 023 024 029 032 036 041 043 044 045 048 049 050 052 053 054 055

Sample Clean-up by SPE	laboratory number
Easy Extract Aflatoxin	030
florisil	002
Micotox	013
Romer Labs	046
silica	006 015

Mycotoxin Determination	laboratory number
ELISA	002 035
fluorometric	009 024
HPLC	004 006 007 008 010 011 012 013 015 016 018 019 020 021 022 023 029 030 031 032 033 034 036 037 039 040 041 043 044 045 046 047 048 049 050 052 053 054 055

HPLC Injection Volume (µL)	laboratory number
<5	046
≥5 - <10	011
≥10 - <25	013 016 043 053
≥25 - <50	009 032
≥50 - <100	007 018 020 022 023 029 033 036 039 041 044 048 054
≥100 - <150	004 008 012 019 021 030 031 034 040 047 049 052 055
≥150	006 037 045 050

HPLC Column Packing	laboratory number
C18	004 006 007 008 009 010 011 013 016 018 019 020 021 022 023 026 029 030 031 032 033 034 036 037 039 040 041 044 045 046 047 048 049 050 052 053 054 055
C8	012
endcapped	018 030 036 045
silica	015

HPLC Column Temperature (°C)	laboratory number
ambient	006 008 011 021 031 033 041 044 045 055
>ambient - <50	004 009 010 012 013 015 016 018 019 023 026 029 032 034 036 037 039 040 046 047 048 049 050 052 053 054
≥50	007 020 022 030

Mobile Phase Components	laboratory number
acetic acid	023 045
acetonitrile	004 006 007 008 009 013 016 018 019 020 021 022 023 030 031 032 036 037 039 041 044 045 047 048 049 050 052 053 054 055
ethylacetate	015
formic acid	015 053
HNO_3 & KBr (for Kobra Cell)	004 006 008 010 012 021 029 030 033 036 039 040 043 047 048 049
methanol	004 006 007 008 009 010 011 012 013 015 016 018 019 020 021 022 023 026 029 030 031 032 033 036 037 039 040 041 043 044 045 046 047 048 049 050 054 055
nitric acid	021
phosphate	048
toluene	015
water	004 006 007 008 009 010 011 012 013 016 018 019 020 021 022 023 026 029 030 031 032 033 034 036 037 039 040 041 043 044 045 046 047 048 049 050 053 054 055

Mobile Phase Flow Rate (mL/min)	laboratory number
≥0.25 - <0.75	011 019 033 046 053
≥0.75 - <1.25	007 008 009 012 013 016 018 020 021 022 023 026 029 030 031 032 034 036 037 039 040 044 045 047 048 049 050 052 054
≥1.25 - <1.75	006 010 015 041 055
≥1.75 - <2.25	004

Post Column Mobile Phase Flow Rate (mL/min)	laboratory number
≥0.25 - <0.75	011 013 037 044 048 050 054
≥0.75	004 006 007 010 022 030 036 047 055

HPLC Pre Column Derivatisation	laboratory number
TFA	045
none	006 010 011 013 016 022 030 036 037 054

HPLC Post Column Derivatisation	laboratory number
Kobra cell	006 008 010 019 021 029 030 031 033 036 039 040 041 043 047 048 049
Iodine	013
photochemische NSD mit UVETM LC-Tech	018
PHRED - photochemical reactor	020 022 023 044 045
Romer Cell	004
saturated iodine	037 050 054
none	011 016

Source of Standards	laboratory number
Biopure	020 032
Fluka	016
R-Biopharm Rhone	010 012 026 030 034 047
Romer Labs	004 029 039 044 046
Sigma/Aldrich	006 011 013 016 018 019 031 033 040 045 048 050 053 054
Supelco	007 008 009 013 016 020 021 022 023 032 041 043 045 049 052 055
VICAM	024

HPLC Detector Type	laboratory number
fluorescence	004 006 007 008 009 010 012 013 015 016 018 019 020 021 022 023 029 030 031 032 033 034 036 037 039 040 041 043 044 045 047 048 049 050 052 054 055
MS-MS	011 046 053

Analytical uncertainty of your results calculated	laboratory number
yes	007 008 016 019 024 037 041 050 054 055
no	002 004 006 009 010 011 012 013 015 018 020 021 022 023 029 030 031 032 034 035 036 039 040 043 044 045 047 048 053

If yes, please state the analytes and relevant uncertainties	laboratory number
1.13	007
12%	041 055
25%	024
27%	008
AF B1 30%	019
B1 3.4%, B2 4.5%, G1 5.0%, G2 5.2%, Total 3.5%	016
B1=0.41?g/kg, B2=0.17?g/kg,G1=0.35?g/kg,G2=0.19?g/kg	050
B1=0.95, B2=0.05, G1=0.12, G2=0.10	037
Three sets of independently run in-house spiked samples were analyzed for aflatoxins B1, B2, G1, G2. %U=18.09%	054

Uncertainty is	laboratory number
an expanded uncertainty	007 008 011 019 024 037 041 050 054 055
a standard uncertainty	016 029

If it was an expanded uncertainty, what coverage factor was applied?	laboratory number
%U = (2)*(RSDr), where RSDr=(StDev)*(100)/(Xavg)	054
0.95	007
2	008 019 024 037 041 050
2 standard deviations	055

APPENDIX II: FAPAS SecureWeb, Reports and Protocol

1. FAPAS SECUREWEB

Access to the secure area of our website is only available to participants in our proficiency tests. Please contact us if you require a UserID and Password. FAPAS® SecureWeb allows participants to:

- Obtain their laboratory numbers for the proficiency tests in which they have participated.
- View the results they submitted in past and current proficiency tests.
- Submit their results and methods for current tests.
- Review future tests they have ordered.
- Order proficiency tests and quality control materials, including surplus test materials from the batch used in this proficiency test.
- Freely download copies of reports, in Acrobat PDF format, of proficiency tests in which they have participated.

2. REPORTS

The Acrobat PDF version of this report is available to all participants as a free download from FAPAS SecureWeb.

A printed and bound version of this report can be purchased, please contact FAPAS for current pricing.

3. PROTOCOL

The Protocols [1, 2] set out how FAPAS® is organised. Copies can be downloaded from our website.

4. QUALITY SYSTEMS

FAPAS® is accredited by UKAS as complying with the requirements of ISO/IEC Guide 43 - 1: 1997, through assessment against ILAC Guide G13:2007.

The Food and Environment Research Agency is an ISO 9001 certified organisation.

5. CONTACT DETAILS

Participants with any comments or concerns about this proficiency test should contact:

FAPAS
The Food and Environment Research Agency
Sand Hutton, York
YO41 1LZ
UK

Tel: +44 (0)1904 462100
Fax: +44 (0)1904 462040
e-mail: info@fapas.com
testmaterials@fapas.com
web: www.fapas.com