QFCS

Quality in Food Chemistry Scheme

Scheme Description

LGC
Proficiency Testing
1 Chamberhall Business Park
Chamberhall Green
Bury
Lancashire
BL9 0AP
United Kingdom

Telephone: +44 (0) 161 762 2500
Email: axiopt@lgcgroup.com
Website: www.lgcstandards.com

Issue: 32 Issue date: July 2021

Record of issue status and modifications

ISSUE	ISSUE DATE	DETAILS	AUTHORISED BY
17	Mar 2016	Addition of analyte (Arsenic - Inorganic) in Sample 789, and addition of Samples 790 (Extra Virgin Olive Oil), 791 (Olive Oil) and 792 (Perchlorates)	S. Xystouris
18	Sep 2016	Revision of pesticide list. Bread and cake samples separated (samples 776 and 793). Addition of new samples: 794 (spices), 795 (mushrooms) & 796 (frying oil). New analytes in samples 761, 762 and 763. General update of appendices.	W.Gaunt/ S.Xystouris
19	Mar 2017	Addition of sample 797, 798 and 799, 800 and addition of Ash in Sample 778.	W.Gaunt/ S.Xystouris
20	Sep 2017	C18:1 added to 790, stigmastadiene in 791 removed, added 2-glyceryl monopalmitate in 791, added Mg, K, Zn in 770, added fat in 782, added samples 801-804, other minor changes. 778, 779, 782, 783, 787, 790, 791 and 792 now accredited.	W.Gaunt/ S.Xystouris
21	Mar 2018	Additional matrix for 774 and addition of new samples 805, 806, 807. Minor changes in units for other samples. Pesticide list updated	W.Gaunt/ S.Xystouris
22	Sep 2018	Pesticide list for 773 updated, unit updated for 802. Removed ash from 778, added Rancimat and acidity in 796, Gadoleic acid in 791, Sum of oleic 18:1 cis n-9 & vaccenic cis 18:1 n-11 in 778 and Sum of EU 4 PAHs in 805. SDPA values reviewed and updated, Minor unit changes for other samples, Addition of 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819 and 820 samples	W.Gaunt S Xystouris
23	Jan 2019	CAS numbers added for pesticides. General update of methods.	W.Gaunt
24	Aug 2019	Methods introduced for all analytes. CAS numbers introduced for pesticides. TDF added for 775, brix added to 817. 12 new samples added from 821 - 833, Change presentation of sample 790, Change sample name for 802, Introduced QDCS Sample 64 as QFCS 823 and specified the free amino acids, Energy added to sample 793, added total trans fatty acids and amended 22:1 fatty acid in 778	S Xystouris W Gaunt
25	Dec 2019	Sample 825 – methods updated, 782 – methods updated for total fat, Updated UKAS logo Removed duplication on page 35 appendix C	S Xystouris W Gaunt
26	Feb 2020	Added dihydrocapsaicin and nordihydrocapsaicin in Sample 826 and added 2 new samples 834 and 835. Methods updated for 779, 787, 793, 794, 808, 809, 810.	S. Xystouris W. Gaunt
27	Feb 2020	Added moisture in 828.	S. Xystouris
28	April 2020	Amended an analyte to eicosenoic acid in 778, change DPs for 826	S. Xystouris
29	Sept 2020	Added new samples 836-859. Added jam to 774 description. As III & As V added to 789 and added the word “total” in Arsenic, 795 changed to 10g, 798 changed to 100g, sample 800 renamed to non-dairy cheese, 804 description updated to slurry, added ferrocyanides to 819, 827 increased to 20g, 831 increased to 15g	Wayne Gaunt S. Xystouris
30	April 2021	Added Ochratoxin A to sample 794 Additional questions in 825 Change to the title of sample 826 Changes to solubility analyte for 824 Total Glycose and Total Xylose added as analytes to sample 824 Addition of new sample 856	Wayne Gaunt Laura Fielding
31	April 2021	Corrected an error with Total Xylose and total glucose (duplication of total glucose)	S. Xystouris
32	Jul 2021	Added new sample 857	S. Xystouris
32	July 2021	Format of gluten in swabs sample updated, Renaming 781, 851 to low in gluten, Renaming 794 to mycotoxins rather than aflatoxins Updated email address and UKAS logo. Changed the analyte name for 846. Added new samples from 858 - 868. Update “supplied as” of 825	L. Fielding S Xystouris A Collins

Notes: Where this document has been translated, the English version shall remain the definitive version.

Scheme Aims and Organisation
The primary aim of the Quality in Food Chemistry Scheme (QFCS) is to enable laboratories performing the analysis of food products to monitor their performance and compare it with that of their peers. QFCS also aims to provide information to participants on technical issues and methodologies relating to the chemical examination of foods.

The QFCS scheme year operates from January to December. Further information about QFCS, including test material availability, round despatch dates and reporting deadlines, are available on the current QFCS application form.

Test Materials
Details of test materials available in QFCS are given in Appendix A. The test parameters are continually reviewed to ensure they meet the needs of current laboratory testing and regulatory requirements.

Test material batches are tested for homogeneity for at least one test parameter where deemed appropriate. Details of homogeneity tests performed and results are given in the QFCS Scheme Reports.

Some aspects of the scheme, such as test material production, homogeneity testing and stability assessment, can from time to time be subcontracted. When subcontracting occurs, it is placed with a competent subcontractor and LGC is responsible for this work. The planning of the scheme, the evaluation of performance and the authorisation of the final report will never be subcontracted.

Statistical Analysis
Information on the statistics used in QFCS can be found in the General Protocol and in the Scheme Report. Methods for determining assigned values and the values for SDPA used for individual samples are given in Appendix A.

Methods
Methods are listed in PORTAL. Please select the most appropriate method from the list. If none of the methods are appropriate, then please report your method as ‘Other’ and record a brief description in the Comments Section in PORTAL.

Results and Reports
QFCS results are returned through our electronic reporting software, PORTAL, full instructions for which are provided by email.

QFCS reports will be available on the website within 10 working days of round closure. Participants will be emailed a link to the report when it is available.

APPENDIX A - Description of abbreviations used

Assigned Value (AV)
The assigned value may be derived in the following ways:

- From the robust mean (median) of participant results (RMean). This is the median of participant results after the removal of test results that are inappropriate for statistical evaluation, e.g. miscalculations, transpositions and other gross errors. Generally, the assigned value will be set using results from all methods, unless the measurement is considered method-dependant, in which case the assigned value will be set by method as illustrated in the report tables.
  For some analytes, where there is a recognised reference method for that type of measurement, this may be used as the assigned value for a particular analyte i.e. it would be applied to results obtained by any method.

  Traceability: Assigned values which are derived from the participant results, or a sub-set of the results are not traceable to an international measurement standard. The uncertainty of assigned values derived in this way is estimated from the participant results, according to ISO 13528.

- From a formulation value (Formulation). This denotes the use of an assigned value derived from sample preparation details, where known and exact quantities of analyte have been used to prepare the sample.

  Traceability: Assigned values calculated from the formulation of the test sample are traceable, via an unbroken metrological traceability chain, to an international measurement standard. The measurement uncertainty of the assigned value is calculated using the contributions from each calibration in the traceability chain.

- From a qualitative formulation (Qual Form). This applies to qualitative tests where the assigned value is simply based on the presence/absence of the analyte in the test material.

  Traceability: Assigned values calculated from the qualitative formulation of the test sample are traceable to a certified reference standard or a microbiological reference strain.

- From expert labs (Expert). The assigned value for the analyte is provided by an 'expert' laboratory.

  Traceability: Assigned values provided by an 'expert' laboratory may be traceable to an international measurement standard, according to the laboratory and the method used. The uncertainty of measurement for an assigned value produced in this way will be provided by the laboratory undertaking the analysis. Details of traceability and the associated uncertainty will be provided in the report for the scheme/round.

Range
This indicates the concentration range at which the analyte may be present in the test material.

SDPA
SDPA represents the 'standard deviation for proficiency assessment' which is used to assess participant performance for the measurement of each analyte. This may be a fixed value (as stated), a percentage (%) of the assigned value or based on the robust standard deviation of the participant measurement results, either across all methods or by method depending on whether the measurement made is method dependent (see assigned value).

Units
This indicates the units used for the assessment of data. These are the units in which participants should report their results. For some analytes in some schemes participants may have a choice of which units to report their results, however, the units stipulated in this scheme description are the default units to which any results reported using allowable alternative results will be converted to.

DP
This indicates the number of decimal places to which participants should report their measurement results.

Sample PT-FC-760 **Analysis of preservatives**
Supplied as 100ml liquid test material

Analyte	Method	Range	AV	SDPA	Units	DP
Sorbic acid	HPLC	All	Formulation	5% of AV (min 5ppm)	mg/L	1
Benzoic acid	HPLC	All	Formulation	5% of AV (min 5ppm)	mg/L	1
Sulfur dioxide	Distillation	All	Formulation	Robust SD	mg/L	1

Sample PT-FC-761 **Analysis of sweeteners**
Supplied as 100ml liquid test material

Analyte	Method	Range	AV	SDPA	Units	DP
Acesulfame K	HPLC	All	Formulation	5% of AV (min 5ppm)	mg/L	1
Aspartame	HPLC	All	Formulation	10% of AV (min 5ppm)	mg/L	1
Saccharin	HPLC	All	Formulation	5% of AV (min 5ppm)	mg/L	1
Sucralose	HPLC	All	Formulation	Robust SD	mg/L	1

Sample PT-FC-762 **Analysis of food colours**
Supplied as 100ml liquid test material

Analyte	Method	Range	AV	SDPA	Units	DP
CAS 2611-82-7 Ponceau 4R	HPLC	All	Formulation	5% of AV (min 5ppm)	mg/L	1
CAS 3567-69-9 Carmoisine	HPLC	All	Formulation	5% of AV (min 5ppm)	mg/L	1
CAS 2783-94-0 Sunset yellow	HPLC	All	Formulation	5% of AV (min 5ppm)	mg/L	1
CAS 860-22-0 Indigo carmine	HPLC	All	Formulation	5% of AV (min 5ppm)	mg/L	1

Sample PT-FC-763 **Analysis of food colours**
Supplied as 100ml liquid test material

Analyte	Method	Range	AV	SDPA	Units	DP
CAS 25956-17-6 Allura red	HPLC	All	Formulation	5% of AV (min 5ppm)	mg/L	1
CAS 1934-21-0 Tartrazine	HPLC	All	Formulation	5% of AV (min 5ppm)	mg/L	1
CAS 8004-92-0 Quinoline yellow	HPLC	All	Formulation	5% of AV (min 5ppm)	mg/L	1
CAS 3844-45-9 Brilliant blue	HPLC	All	Formulation	5% of AV (min 5ppm)	mg/L	1

Sample PT-FC-770 **Nutritional analysis of processed cereal based food**
Supplied as 100g cereal based food

Analyte	Method	Range	AV	SDPA	Units	DP
Energy	Type 1: Protein+Fat+Total carb, Type 2: Protein+Fat+Available carb+TDF	All	Median	5% of AV	kcal or kJ/100g	0
Fat	Acid hydrolysis & Soxhlet, Gerber, NIR (food analyser), Soxhlet, NMR	All	Median	Robust SD	%	2
Carbohydrate (total & available)	Available carbohydrate Total carbohydrate	All	Median	Robust SD	%	2
Total sugars	HPLC, Lane and Eynon, Luff Schoorl	All	Median	20% of AV (min 1%)	%	2

Analyte	Method	Range	AV	SDPA	Units	DP
Total dietary fibre	AOAC 985.29, AOAC 991.43, AOAC 992.16	All	Median	0.50	%	2
Protein	Dumas, Kjeldahl, NIR (food analyser)	All	Median	0.30	%	2
Salt	Determined from chloride Determined from sodium	All	Median	Robust SD	% (as NaCl)	2
Sodium	Atomic absorption, Flame Photometry, Ion chromatography, Titration	All	Median	0.05	%	2
Ash	Drying at 500°C Drying at 525°C Drying at 550°C	All	Median	0.10	%	2
Moisture	Drying at 87°C Drying at 100-105°C Drying at 130°C	All	Median	0.50	%	2
Phosphate	Spectrophotometer, ICP-OES, ICP-MS	All	Median	0.05	%PO_4	2
Magnesium	ICP-OES, ICP-MS, AAS, IC, Colorimetry	All	Median	Robust SD	mg/100g	2
Potassium	ICP-OES, ICP-MS, AAS, IC, Colorimetry	All	Median	Robust SD	mg/100g	2
Zinc	ICP-OES, ICP-MS, AAS	All	Median	Robust SD	mg/kg	2

Sample PT-FC-771 **Vitamins & minerals in cereal based food**
Supplied as 100g cereal based food

Analyte	Method	Range	AV	SDPA	Units	DP
Vitamin A	HPLC	All	Median	Robust SD	µg retinol/100g	1
Thiamine *(vitamin B1)*	HPLC	All	Median	25% of AV	mg/100g	2
Riboflavin *(vitamin B2)*	HPLC	All	Median	25% of AV	mg/100g	2
Niacin *(vitamin B3)*	HPLC	All	Median	Robust SD	mg/100g	2
Pantothenic Acid *(vitamin B5)*	HPLC	All	Median	Robust SD	mg/100g	2
Vitamin B6	HPLC	All	Median	25% of AV	mg/100g	2
Folic Acid *(vitamin B9)*	HPLC	All	Median	20% of AV	µg/100g	1
Vitamin B12	HPLC	All	Median	Robust SD	µg/100g	2
Vitamin C	HPLC	All	Median	20% of AV	mg ascorbic acid/100g	2
Vitamin D	HPLC	All	Median	Robust SD	µg/100g	1
Iron	ICP-OES, ICP-MS, AAS	All	Median	15% of AV	mg/100g	2

Sample PT-FC-772 **Nutritional analysis of a 'pre-prepared' food product**
Supplied as 150g 'pre-prepared' food product (for example: potato, rice or pasta based meal)

Analyte	Method	Range	AV	SDPA	Units	DP
Energy	Type 1: Protein+Fat+Total carb, Type 2: Protein+Fat+Available carb+TDF	All	Median	5% of AV	kcal or kJ/100g	0
Fat	Acid hydrolysis & Soxhlet, Gerber, NIR (food analyser), Soxhlet, NMR	All	Median	Robust SD	% (g/100g)	2
Saturates	GC	All	Median	20% of AV	% (g/100g)*	2
Analyte	**Method**	**Range**	**AV**	**SDPA**	**Units**	**DP**
Mono-unsaturates	GC	All	Median	20% of AV	% (g/100g)*	2
Poly-unsaturates	GC	All	Median	20% of AV	% (g/100g)*	2

Total trans fatty acids	GC	All	Median	Robust SD	% (g/100g)*	2
Carbohydrate	Available carbohydrate Total carbohydrate	All	Median	1.00	%	2
Total sugars	HPLC, Lane and Eynon, Luff Schoorl	All	Median	1.00	%	2
Total dietary fibre	AOAC 985.29, AOAC 991.43, AOAC 992.16	All	Median	0.50	%	2
Protein	Dumas, Kjeldahl, NIR (food analyser)	All	Median	0.30	%	2
Salt	Determined from chloride Determined from sodium	All	Median	0.05	% (as NaCl)	2
Sodium	Atomic absorption, Flame Photometry, Ion chromatography, Titration	All	Median	0.05	%	2
Ash	Drying at 500°C Drying at 525°C Drying at 550°C	All	Median	0.10	%	2
Moisture	NIR (food analyser), Microwave, Oven drying, Heating to constant weight, Karl Fischer	All	Median	0.50	%	2
Phosphate	Spectrophotometer, ICP-OES, ICP-MS	All	Median	0.05	%PO_4	2
Cholesterol	GC	All	Median	30% of AV	mg/100g	2

*Results should be reported as % (g/100g) of the whole product.

Sample PT-FC-774 **Water activity analysis of food**
Supplied as 50g cured meat, hard cheese, cereal, dried fruit and jam – see the current QFCS Application form for full details.

Analyte	Method	Range	AV	SDPA	Units	DP
Water activity	Water activity meter	<0.2 0.2 to 0.8 >0.8	Median	0.050 0.020 0.010	A_w	3

Sample PT-FC-775 **Nutritional analysis of wheat flour**
Supplied as 100g flour

Analyte	Method	Range	AV	SDPA	Units	DP
Fat	Acid hydrolysis and Soxhlet NIR Soxhlet	All	Median	25% of AV	%	2
Protein	Dumas Kjeldahl NIR (food analyser)	All	Median	0.30	%	2
Total dietary fibre	All	All	Median	Robust SD	%	2
Ash	Drying at 500°C Drying at 525°C Drying at 550°C	All	Median	0.20	%	2
Moisture	Drying at 100-105°C Drying at 130°C Drying at 87°C	All	Median	0.50	%	2
Analyte	**Method**	**Range**	**AV**	**SDPA**	**Units**	**DP**
Calcium	AAS, Colorimetry, Flame photometry, ICP-MS, ICP-OES, Ion chromatography, Titration	All	Median	15% of AV	mg/100g	2
Iron	AAS, ICP-MS, ICP-OES	All	Median	20% of AV (min 0.2)	mg/100g	2

Sample PT-FC-776 **Nutritional analysis of bread**
Supplied as 100g bread

Analyte	Method	Range	AV	SDPA	Units	DP
Fat	Acid hydrolysis & Soxhlet, Gerber, NIR (food analyser), NMR, Soxhlet	All	Median	Robust SD	%	2
Protein	Dumas, Kjeldahl, NIR (food analyser)	All	Median	0.30	%	2
Total dietary fibre	Various	All	Median	0.50	%	2
Acidity	Various	All	Median	Robust SD	% oleic acid	2
Ash	Various	All	Median	0.20	%	2
Moisture	Heating to constant weight, Karl Fischer, Microwave, NIR (food analyser), Oven drying	All	Median	0.50	%	2
Sodium	Atomic absorption, Flame photometry, Ion chromatography, Titration	All	Median	10% of AV (min 0.25)	%	2
Chloride	Chloride analyser, Ion chromatography, Titration	All	Median	0.15	%	2
Calcium	AAS, colorimetry, flame photometry, ICP-MS, ICP-OES, Ion chromatography, Titration	All	Median	15% of AV	mg/100g	2
Iron	AAS, ICP-MS, ICP-OES	All	Median	20% of AV (min 0.25)	mg/100g	2
Thiamine *(vitamin B1)*	HPLC	All	Median	Robust SD	mg/100g	2
Riboflavin *(vitamin B2)*	HPLC	All	Median	Robust SD	mg/100g	2
Niacin *(vitamin B3)*	HPLC	All	Median	Robust SD	mg/100g	2

Sample PT-FC-777* ** **Pesticides analysis of dried tea**
Supplied as 50g dried tea material containing up to 6 quantifiable pesticides (from Appendix C)
50g blank dried tea matrix**

Analyte	Method	Range	AV	SDPA	Units	DP

Pesticides	GC-ECD, GC-MS, GC-MS/MS, HPLC, LC-MS, LC-MS/MS	All	Median	25% of AV	µg/kg	1

**A blank matrix is provided for laboratories that require a spiked quality control material to be run alongside samples being assessed. Results are not required to be returned for the blank matrix provided.

***Currently not included in LGC's UKAS Scope of Accreditation

Participants will be required to screen the sample provided and report the presence of any pesticides found above their routine reporting limits. Each pesticide detected in the sample should also be quantified.

Sample PT-FC-778 **Edible Oil & Fat analysis**
Supplied as: 1 x 150g of edible oil or fat

Analyte	Method	Range	AV	SDPA	Units	DP
Water	Karl Fisher, Oven drying, Vacuum oven, Distillation	-	Median	Robust SD	g/kg	2
Free fatty acids (acidity)	Titration	-	Median	20% of AV (min 0.025)	% oleic acid	2
Saponification value	Titration	-	Median	5.0	KOH mg/g	1
Unsaponifiable matter	ISO 3596, ISO 18609, IS 548:1964, AOAC 933.08	-	Median	Robust SD	g/kg	2
Anisidine value	Various	-	Median	Robust SD	AV	2
Colour	Spectrophotometry	-	Median	Robust SD	Hazen mg pt/L	1
Colour	Lovibond, path length 1" Lovibond, path length 5.25" Lovibond, path length 5.5"	-	Median	Robust SD	Lovibond	1
Iodine value	Titration	-	Median	2.5% of AV	% Iodine absorbed	1
Peroxide value	Titration	-	Median	20% of AV (min 0.025)	mEq O_2/kg sample	2
Fatty acid composition*						
12:0 Lauric acid	GC	All	Median	≤10: Robust SD >10: 5% of AV	% total fatty acids	2
14:0 Myristic acid	GC	All	Median	≤10: Robust SD >10: 5% of AV	% total fatty acids	2
14:1 n-5 Myristoleic acid	GC	All	Median	≤10: Robust SD >10: 5% of AV	% total fatty acids	2
15:0 Pentadecanoic acid	GC	All	Median	≤10: Robust SD >10: 5% of AV	% total fatty acids	2
16:0 Palmitic acid	GC	All	Median	≤10: Robust SD >10: 5% of AV	% total fatty acids	2
16:1 Palmitoleic acid (cis & trans)	GC	All	Median	≤10: Robust SD >10: 5% of AV	% total fatty acids	2
17:0 Heptadecanoic acid	GC	All	Median	≤10: Robust SD >10: 5% of AV	% total fatty acids	2

Analyte	Method	Range	AV	SDPA	Units	DP
18:0 Stearic acid	GC	All	Median	≤10: Robust SD >10: 5% of AV	% total fatty acids	2
18:1 Oleic acid (cis) n-9	GC	All	Median	≤10: Robust SD >10: 5% of AV	% total fatty acids	2
18:1 Oleic acid (total cis and trans)	GC	All	Median	≤10: Robust SD >10: 5% of AV	% total fatty acids	2
Sum of oleic 18:1 cis n-9 & vaccenic cis 18:1 n-11	GC	All	Median	≤10: Robust SD >10: 5% of AV	% total fatty acids	2
18:2 Linoleic acid (n-6) cis & trans	GC	All	Median	≤10: Robust SD >10: 5% of AV	% total fatty acids	2
18:3 Linolenic acid (n-3) cis & trans	GC	All	Median	≤10: Robust SD >10: 5% of AV	% total fatty acids	2
20:1 Eicosenoic acid	GC	All	Median	≤10: Robust SD >10: 5% of AV	% total fatty acids	2
22:0 Behemic acid	GC	All	Median	≤10: Robust SD >10: 5% of AV	% total fatty acids	2
22:1 Erucic acid (cis-13-docosenoic acid)	GC	All	Median	≤10: Robust SD >10: 5% of AV	% total fatty acids	2
Total trans fatty acids (sum of all)	-	All	Median	≤10: Robust SD >10: 5% of AV	% total fatty acids	2

FAMES requested will be selected depending upon the material that is chosen in each round.
*Values below 0.5% are to be considered as below the limit of detection and performance scores will not be provided.

Sample PT-FC-779 **Aflatoxin analysis of nuts**
Supplied as 50g nut & 50g blank nut matrix

Analyte	Method	Range	AV	SDPA	Units	DP
Aflatoxins B_1, B_2, G_1, G_2	HPLC, ELISA, LC-MS/MS	All	Median	Robust SD	µg/kg	1
Total aflatoxins	HPLC, ELISA, LC-MS/MS	All	Median	Robust SD	µg/kg	1

A blank matrix is provided for laboratories that require a spiked quality control material to be run alongside samples being analysed; however only results for the spiked sample are to be reported. Results are not required to be returned for the blank matrix provided and any blank values must not to be taken into account when reporting the spiked sample values.

Sample PT-FC-780* ** **Elements analysis in dried tea**
Supplied as 50g dried green tea

Analyte	Method	Range	AV	SDPA	Units	DP
Total arsenic	AAS, ICP-MS, ICP-OES	All	Median	Robust SD	mg/kg	2
Cadmium	AAS, ICP-MS, ICP-OES	All	Median	Robust SD	mg/kg	2

Mercury	AAS, ICP-MS, ICP-OES	All	Median	Robust SD	mg/kg	2
Lead	AAS, ICP-MS, ICP-OES	All	Median	Robust SD	mg/kg	2
Selenium	AAS, ICP-MS, ICP-OES	All	Median	Robust SD	mg/kg	2

Sample PT-FC-781* **Gluten in flour (low level gluten)**
Supplied as 100g contaminated gluten free flour

Analyte	Method	Range	AV	SDPA	Units	DP
Gluten	AgraQuant Gluten, PCR, RIDASCREEN Gliadin competitive (R7021), RIDASCREEN Gliadin non-competitive (R7001), LC-MS/MS	20 - 120	Median	Robust SD	mg/kg	1

***Currently not included in LGC's UKAS Scope of Accreditation

Sample PT-FC-782 **Nutritional analysis of mixed fat spread**
Supplied as 100g mixed fat spread

Analyte	Method	Range	AV	SDPA	Units	DP
Total Fat	GC, Acid hydrolysis & Soxhlet, NIR (food analyser), Soxhlet, NMR, Werner Schmid, Mojonnier	All	Median	Robust SD	%	2
Saturates	GC	All	Median	20% of AV	g/100g*	2
Mono-unsaturates	GC	All	Median	20% of AV	g/100g*	2
Poly-unsaturates	GC	All	Median	20% of AV	g/100g*	2
Total trans fatty acids	GC	All	Median	Robust SD	g/100g*	2
Omega 3	GC, HPLC	-	Median	Robust SD	g/100g*	2
Omega 6	GC, HPLC	-	Median	Robust SD	g/100g*	2
Salt	Chloride analyser, Mohr, Potentiometric titration, Volhard	All	Median	0.05	%	2
Water	Food analyser, Hot plate drying, Karl Fischer, Over drying	All	Median	0.20	%	2
pH	pH meter	All	Median	0.10	-	2
Vitamin A	HPLC	-	Median	Robust SD	µg retinol/100g	1
Vitamin D	HPLC	-	Median	Robust SD	µg/100g	1

*All results must to be reported as the concentration determined in test material provided.

Sample PT-FC-783 **Nutritional analysis of tomato paste/puree**
Supplied as 100g tomato paste/puree

Analyte	Method	Range	AV	SDPA	Units	DP
pH	pH meter	All	Median	Robust SD	-	2
Brix	Densitometer, refractometer	All	Median	Robust SD	%	2
Total acidity	Titration	All	Median	Robust SD	% citric acid	2
Total solids	Microwave, moisture analyser, oven drying, vacuum oven	All	Median	Robust SD	%	2

Ash	Drying at 500°C Drying at 525°C Drying at 550°C	All	Median	Robust SD	%	2
Salt	Determined from chloride, Determined from sodium	All	Median	Robust SD	% (as NaCl)	2

Sample PT-FC-784* **Elements analysis in cereal grain**
Supplied as 50g cereal grain

Analyte	Method	Range	AV	SDPA	Units	DP
Total arsenic	AAS, ICP-MS, ICP-OES	All	Median	Robust SD	mg/kg	2
Cadmium	AAS, ICP-MS, ICP-OES	All	Median	Robust SD	mg/kg	2
Lead	AAS, ICP-MS, ICP-OES	All	Median	Robust SD	mg/kg	2
Mercury	AAS, ICP-MS, ICP-OES	All	Median	Robust SD	mg/kg	2

Sample PT-FC-785* **Elements analysis in oil**
Supplied as 50g edible oil

Analyte	Method	Range	AV	SDPA	Units	DP
Total arsenic	AAS, ICP-OES, ICP-MS	All	Median	Robust SD	mg/kg	2
Cadmium	AAS, ICP-OES, ICP-MS	All	Median	Robust SD	mg/kg	2
Lead	AAS, ICP-OES, ICP-MS	All	Median	Robust SD	mg/kg	2
Mercury	AAS, ICP-OES, ICP-MS	All	Median	Robust SD	mg/kg	2

Sample PT-FC-786* **Elements analysis in dried fruit**
Supplied as 50g dried fruit

Analyte	Method	Range	AV	SDPA	Units	DP
Total arsenic	AAS, ICP-OES, ICP-MS	All	Median	Robust SD	mg/kg	2
Cadmium	AAS, ICP-OES, ICP-MS	All	Median	Robust SD	mg/kg	2
Lead	AAS, ICP-OES, ICP-MS	All	Median	Robust SD	mg/kg	2
Mercury	AAS, ICP-OES, ICP-MS	All	Median	Robust SD	mg/kg	2

***Currently not included in LGC's UKAS Scope of Accreditation

Sample PT-FC-787 **Nitrate analysis in vegetables**
Supplied as 50g of vegetable

Analyte	Method	Range	AV	SDPA	Units	DP
Nitrate	HPLC, Ion chromatography, Spectrophotometry	2000 to 7000	Median	Robust SD	mg/kg (as NaNO3)	0

Sample PT-FC-788* **Acrylamide analysis in snacks**
Supplied as 50g snack product

Analyte	Method	Range	AV	SDPA	Units	DP
Acrylamide	LC-MS/MS, GC-MS	All	Median	Robust SD	µg/kg	0

Sample PT-FC-789* **Elements analysis in rice**
Supplied as 10g rice

Analyte	Method	Range	AV	SDPA	Units	DP
Total arsenic	AAS, ICP-OES, ICP-MS	All	Median	Robust SD	mg/kg	3
Total Inorganic arsenic[1]	AAS, ICP-OES, ICP-MS	All	Median	Robust SD	mg/kg	3
As (III)	EN 16802:2016 HPLC-ICP-MS	All	Median	Robust SD	mg/kg	3
As (V)	EN 16802:2016 HPLC-ICP-MS	All	Median	Robust SD	mg/kg	3
Cadmium	AAS, ICP-OES, ICP-MS	All	Median	Robust SD	mg/kg	3
Lead	AAS, ICP-OES, ICP-MS	All	Median	Robust SD	mg/kg	3

[1]Sum of As (III) and As (V)

***Currently not included in LGC's UKAS Scope of Accreditation

Sample PT-FC-790 **Extra virgin olive oil analysis**
Supplied as: 2 x 200ml extra virgin olive oil,
1 x 50ml for insoluble impurities only

Analyte	Method	Range	AV	SDPA	Units	DP
Peroxide value	Titration	≤10 >10	Median	0.8 1.2	mEq O_2/kg	2
Free fatty acids (acidity)	Titration	<0.2 0.2-1 >1	Median	24% of AV 5% of AV 3% of AV	% oleic acid	2
K_{232}	Spectrophotometry – cyclohexane Spectrophotometry – iso octane	-	Median	5% of AV	-	2
K_{270}	Spectrophotometry – cyclohexane Spectrophotometry – iso octane	≤0.2 >0.2	Median	8% of AV 5% of AV	-	2
Wax content	GC	<50 50-200 >200	Median	20% of AV 14% of AV 9% of AV	mg/kg	0
3,5 stigmastadienes	GC	-	Median	41% of AV	mg/kg	3
Ethyl esters	GC	≤15 >15	Median	30% of AV 15% of AV	mg/kg	0
Total sterols	GC	≤1500 >1500	Median	6% of AV 8% of AV	mg/kg	0
Δ7-stigmastenol	GC	-	Median	20% of AV	% total sterols	2
Insoluble impurities	Gravimetric analysis	-	Median	Robust SD	% w/w	2
Moisture and volatile matter at 103°C	Gravimetric analysis	-	Median	Robust SD	% w/w	2
Total polyphenols	Spectrophotometry (Folin Ciocalteau)	-	Median	Robust SD	mg of caffeic acid /kg of oil	1
Fatty acid composition						

Analyte	Method	Range	AV	SDPA	Units	DP
16:0 Palmitic acid	GC	-	Median	5% of AV	% total fatty acids	2
18:0 Stearic acid	GC	-	Median	4% of AV	% total fatty acids	2
18:1 Oleic acid (cis & trans)	GC	-	Median	0.6% of AV	% total fatty acids	2
18:2 Linoleic acid (cis & trans)	GC	-	Median	2% of AV	% total fatty acids	2
18:3 Linolenic acid (cis & trans)	GC	-	Median	4.4% of AV	% total fatty acids	2

Sample PT-FC-791 **Olive oil analysis**
Supplied as: 2 x 200ml olive oil or olive pomace oil

Analyte	Method	Range	AV	SDPA	Units	DP
Free fatty acids (acidity)	Titration	<0.2 0.2-1 >1	Median	24% of AV 5% of AV 3% of AV	% oleic acid	2
K_{270}	Spectrophotometry – cyclohexane Spectrophotometry – iso octane	≤0.2 >0.2	Median	8% of AV 5% of AV	-	2
ΔK	Spectrophotometry – cyclohexane Spectrophotometry – iso octane	-	Median	Robust SD	-	2
Wax content	GC	<50 50-200 >200	Median	20% of AV 14% of AV 9% of AV	mg/kg	0
β-sitosterol (apparent)	GC	≤85 >85	Median	2% of AV 0.4% of AV	% total sterols	2
Campesterol	GC	-	Median	3% of AV	% total sterols	2
Erythrodiol & Uvaol	GC, HPLC	-	Median	7% of AV	% total sterols	2
ΔECN 42	HPLC	-	Median	Robust SD	-	2
Accelerated oxidation test (Rancimat) at 120°C	Rancimat		Median	10% of AV	Induction time (hours)	2
2-glyceryl monopalmitate	GC/Other	-	Median	Robust SD	%	2
Fatty acid composition						
16:1 Palmitoleic acid (cis & trans)	GC	-	Median	6% of AV	% total fatty acids	2
18:1 Oleic acid (cis & trans)	GC	-	Median	0.6% of AV	% total fatty acids	2
18:1 Oleic acid (trans)	GC	≤0.03 >0.03	Median	0.01 0.02	% total fatty acids	2
18:2 Linoleic acid (trans)	GC	≤0.03 >0.03	Median	0.01 0.02	% total fatty acids	2

Analyte	Method	Range	AV	SDPA	Units	DP
18:3 Linolenic acid (trans)	GC	≤0.03 >0.03	Median	0.01 0.02	% total fatty acids	2
20:0 Arachidic acid	GC	-	Median	10% of AV	% total fatty acids	2
20:1 Gadoleic acid (cis & trans)	GC	-	Median	Robust SD	% total fatty acids	2

Sample PT-FC-792 **Perchlorates in vegetables**
Supplied as 50g of vegetable

Analyte	Method	Range	AV	SDPA	Units	DP
Perchlorate	All	All	Median	Robust SD	mg/kg	2

Sample PT-FC-793 **Nutritional analysis of cake**
Supplied as 100g cake

Analyte	Method	Range	AV	SDPA	Units	DP
Energy	Type 1: Protein+Fat+Total carb, Type 2: Protein+Fat+Available carb+TDF	All	Median	Robust SD	kcal or kJ/100g	0
Fat	Soxhlet, Acid hydrolysis & Soxhlet, NMR, NIR (food analyser)	All	Median	Robust SD	%	2
Total sugars	HPLC, Luff Schoorl, Lane and Eynon	All	Median	Robust SD	%	2
Total dietary fibre	AOAC 991.43, AOAC 985.29	All	Median	0.50	%	2
Protein	Dumas, Kjeldahl, NIR (food analyser)	All	Median	0.30	%	2
Acidity	Titration	All	Median	Robust SD	% oleic acid	2
Ash	Drying at 500°C Drying at 525°C Drying at 550°C	All	Median	0.20	%	2
Moisture	NIR (food analyser), Microwave, Oven drying, Heating to constant weight	All	Median	Robust SD	%	2
Analyte	**Method**	**Range**	**AV**	**SDPA**	**Units**	**DP**
Sodium	Atomic absorption, Flame Photometry, Ion chromatography, Titration	All	Median	Robust SD	%	2
Chloride	Chloride analyser, Titration, Ion chromatography	All	Median	Robust SD	%	2
Calcium	AAS, ICP-OES, ICP-MS, Ion chromatography, Flame Photometry, Colorimetry, Titration	All	Median	Robust SD	mg/100g	2

Sample PT-FC-794* ** **Mycotoxins analysis of spices**
Supplied as 100g chilli powder

Analyte	Method	Range	AV	SDPA	Units	DP
Aflatoxins B_1, B_2, G_1, G_2	HPLC, ELISA, LC-MS/MS	All	Median	Robust SD	µg/kg	2
Total aflatoxins	HPLC, ELISA, LC-MS/MS	All	Median	Robust SD	µg/kg	2

Ochratoxin A	HPLC, ELISA, LC-MS/MS	All	Median	Robust SD	µg/kg	2

Sample PT-FC-795* **Elements in mushrooms**
Supplied as 10g of dried mushrooms

Analyte	Method	Range	AV	SDPA	Units	DP
Total arsenic	AAS, ICP-MS, ICP-OES	All	Median	Robust SD	mg/kg	3
Cadmium	AAS, ICP-MS, ICP-OES	All	Median	Robust SD	mg/kg	3
Lead	AAS, ICP-MS, ICP-OES	All	Median	Robust SD	mg/kg	3

Sample PT-FC-796* **Quality of frying oil**
Supplied as 150g used frying oil

Analyte	Method	Range	AV	SDPA	Units	DP
Total polar compounds	Column chromatography - gravimetry	All	Median	Robust SD	%	1
Free fatty acids (acidity)	Titration	All	Median	Robust SD	% oleic acid	2
Accelerated oxidation test (Rancimat) at 120°C	Rancimat	All	Median	Robust SD	Induction time (hours)	2

Sample PT-FC-797* **Sulfur dioxide in dried fruit**
Supplied as 200g dried fruit slurry

Analyte	Method	Range	AV	SDPA	Units	DP
Sulfur dioxide	Distillation (Monier Williams), Ion chromatography	All	Median	Robust SD	mg/kg	0

***Currently not included in LGC's UKAS Scope of Accreditation

Sample PT-FC-798* **Nitrate in infant vegetable purée**
Supplied as 100g vegetable food

Analyte	Method	Range	AV	SDPA	Units	DP
Nitrate	HPLC, Ion chromatography, Spectrophotometry	10 to 300	Median	Robust SD	mg/kg (as $NaNO_3$)	0

Sample PT-FC-799* **Egg white allergen in cake mix (allergens testing)**
Supplied as 20g cake mix powder

Analyte	Method	Range	AV	SDPA	Units	DP
Egg white protein	All	All	Median	Robust SD	mg/kg	2

Sample PT-FC-800* **Non-dairy cheese**
Supplied as 100g of non-dairy cheese

Analyte	Method	Range	AV	SDPA	Units	DP
Total fat	Gerber, NIR (food analyser), Soxhlet	All	Median	Robust SD	g/100g	2

Analyte	Method	Range	AV	SDPA	Units	DP
Saturates	GC	All	Median	Robust SD	g/100g	2
Mono-unsaturates	GC	All	Median	Robust SD	g/100g	2
Poly-unsaturates	GC	All	Median	Robust SD	g/100g	2
Total trans fatty acids	GC	All	Median	Robust SD	g/100g	2
Total omega 3	GC	All	Median	Robust SD	g/100g	2
Total omega 6	GC	All	Median	Robust SD	g/100g	2
Total omega 3:Total omega 6 ratio	-	All	Median	Robust SD	-	2
4:0 Butyric acid	GC	All	Median	Robust SD	g/100g	2
12:0 Lauric acid	GC	All	Median	Robust SD	g/100g	2

***Currently not included in LGC's UKAS Scope of Accreditation

Sample PT-FC-801* **Honey essential composition and quality factors**
Supplied as 200g honey (blossom/nectar and/or untreated honey)

Analyte	Method	Range	AV	SDPA	Units	DP
Moisture	Refractometer	All	Median	Robust SD	%	0
Electrical conductivity	Conductivity meter	All	Median	Robust SD	mS/cm	2
Ash	Drying at 500°C Drying at 525°C Drying at 550°C	All	Median	Robust SD	g/100g	2
pH	pH meter	All	Median	Robust SD	-	2
Free acidity	Titration	All	Median	Robust SD	mEq acid/kg	2
Analyte	**Method**	**Range**	**AV**	**SDPA**	**Units**	**DP**
Hydroxymethylfurfural (HMF)	HPLC, White method (spectrophotometry), Winkler (spectrophotometry)	All	Median	Robust SD	mg/kg	1
Diastase enzymatic activity (Diastase number)	Spectrophotometry	All	Median	Robust SD	Schade (Gothe) units/g	1
Fructose	GC, HPLC	All	Median	Robust SD	g/100g	3
Glucose	GC, HPLC	All	Median	Robust SD	g/100g	3
Sucrose	GC, HPLC	All	Median	Robust SD	g/100g	3
Water insoluble solids	Gravimetry	All	Median	Robust SD	g/100g	2

Sample PT-FC-802* **Ground coffee quality parameters**
Supplied as 200g ground roasted coffee

Analyte	Method	Range	AV	SDPA	Units	DP
Water	Karl Fischer	All	Median	Robust SD	%	2
Ash	Gravimetry	All	Median	Robust SD	%	2
pH	pH meter	All	Median	Robust SD	-	2

Total acidity	Titration	All	Median	Robust SD	% citric acid anhydrous	2
Total chlorogenic acids	HPLC	All	Median	Robust SD	mg/g	2
Caffeine	HPLC	All	Median	Robust SD	mg/g	2
Potassium (K)	Flame AAS, ICP-OES	All	Median	Robust SD	mg/kg	0
Phosphorus (P)	Flame AAS, ICP-OES	All	Median	Robust SD	mg/kg	0

Analyte	Method	Range	AV	SDPA	Units	DP
Magnesium (Mg)	Flame AAS, ICP-OES	All	Median	Robust SD	mg/kg	0
Calcium (Ca)	Flame AAS, ICP-OES	All	Median	Robust SD	mg/kg	0
Copper (Cu)	ET-AAS, ICP-MS, ICP-OES	All	Median	Robust SD	mg/kg	2

Sample PT-FC-803* ** **Sudan IV in palm oil**
Supplied as 50g palm oil

Analyte	Method	Range	AV	SDPA	Units	DP
Sudan IV	LC-MS/MS	All	Median	Robust SD	mg/kg	2

Sample PT-FC-804* ** **Mycotoxins in dried fruits**
Supplied as 200g of slurry

Analyte	Method	Range	AV	SDPA	Units	DP
Aflatoxins B_1, B_2, G_1, G_2	ELISA, HPLC, LC-MS/MS	All	Median	Robust SD	µg/kg	2
Total aflatoxins	ELISA, HPLC, LC-MS/MS	All	Median	Robust SD	µg/kg	2
Ochratoxin A	ELISA, HPLC, LC-MS/MS	All	Median	Robust SD	µg/kg	2

***Currently not included in LGC's UKAS Scope of Accreditation

Sample PT-FC-805* ** **Polycyclic Aromatic Hydrocarbons (4 EU markers) in vegetable oil**
Supplied as 50ml vegetable oil

Analyte	Method	Range	AV	SDPA	Units	DP
Benzo[a]pyrene	GC-MS, HPLC, GC-MS/MS, Fluorescence	All	Median	Robust SD	µg/kg	2
Benz[a]anthracene	GC-MS, HPLC, GC-MS/MS, Fluorescence	All	Median	Robust SD	µg/kg	2
Benzo[b]fluoranthene	GC-MS, HPLC, GC-MS/MS, Fluorescence	All	Median	Robust SD	µg/kg	2
Chrysene	GC-MS, HPLC, GC-MS/MS, Fluorescence	All	Median	Robust SD	µg/kg	2
Sum of EU 4 PAHs	GC-MS, HPLC, GC-MS/MS, Fluorescence	All	Median	Robust SD	µg/kg	2

Sample PT-FC-806* ** **Essential composition and fatty acids breakdown of fish oil supplement**
Supplied as 100ml cod liver oil

Analyte	Method	Range	AV	SDPA	Units	DP
cis Alpha-linolenic acid (ALA)	GC	All	Median	Robust SD	g/100g	3
cis Eicosapentaenoic acid (EPA)	GC	All	Median	Robust SD	g/100g	2
cis Docosapentaenoic (DPA)	GC	All	Median	Robust SD	g/100g	2
cis Docosahexaenoic (DHA)	GC	All	Median	Robust SD	g/100g	2
Monounsaturated fatty acids	GC	All	Median	Robust SD	g/100g	2
Polyunsaturated fatty acids	GC	All	Median	Robust SD	g/100g	2
Saturated fatty acids	GC	All	Median	Robust SD	g/100g	2
Total EPA+DHA Omega-3 fatty acids	GC	All	Median	Robust SD	g/100g	2
Total Omega-3 fatty acids	GC	All	Median	Robust SD	g/100g	2
Total Omega-6 fatty acids	GC	All	Median	Robust SD	g/100g	2
Total Omega-9 fatty acids	GC	All	Median	Robust SD	g/100g	2
Omega-3 : Omega-6 ratio	Calculation	All	Median	Robust SD	-	2
Total trans fatty acids	GC	All	Median	Robust SD	g/100g	3
Vitamin A	GC	All	Median	Robust SD	mg retinol/ml	2
Vitamin D	GC	All	Median	Robust SD	µg/ml	2

Sample PT-FC-807* ** **Glyphosate and AMPA in grain flour**
Supplied as 25g barley flour

Analyte	Method	Range	AV	SDPA	Units	DP
Glyphosate	LC-MS/MS	All	Median	Robust SD	mg/kg	2
AMPA	LC-MS/MS	All	Median	Robust SD	mg/kg	2

***Currently not included in LGC's UKAS Scope of Accreditation

Sample PT-FC-808* ** **Almond in rice flour (allergen testing)**
Supplied as 20g contaminated rice flour

Analyte	Method	Range	AV	SDPA	Units	DP
Almond	ELISA, PCR, LC-MS/MS	All	Median	Robust SD	mg/kg	2

Sample PT-FC-809* ** **Soy in rice flour (allergen testing)**
Supplied as 20g contaminated rice flour

Analyte	Method	Range	AV	SDPA	Units	DP
Soy	ELISA, PCR, LC-MS/MS	All	Median	Robust SD	mg/kg	2

Sample PT-FC-810* ** **β-lactoglobulin in infant formula powder (allergen testing)**
Supplied as 20g contaminated infant formula powder

Analyte	Method	Range	AV	SDPA	Units	DP

β-lactoglobulin	ELISA, PCR, LC-MS/MS	All	Median	Robust SD	µg/kg	2

Sample PT-FC-811* **Nutritional analysis of ketchup**
Supplied as 200g ketchup

Analyte	Method	Range	AV	SDPA	Units	DP
Energy	Type 1: Protein+Fat+Total carb, Type 2: Protein+Fat+Available carb+TDF	All	Median	Robust SD	kcal or kJ/100g	0
Fat	Acid hydrolysis & Soxhlet, Gerber, NIR (food analyser), Soxhlet, NMR	All	Median	Robust SD	% (g/100g)	2
Saturates	GC	All	Median	Robust SD	% (g/100g)	2
Carbohydrate	Total carbohydrate, Available carbohydrate	All	Median	Robust SD	% (g/100g)	2
Total sugars	HPLC, Luff Schoorl, lane and Eynon	All	Median	Robust SD	% (g/100g)	2
Protein	Dumas, Kjeldahl, NIR (food analyser)	All	Median	Robust SD	% (g/100g)	2
Salt	Determined from chloride, Determined from sodium	All	Median	Robust SD	% (as NaCl)	2
Total dietary fibre	AOAC 991.43 AOAC 985.29 AOAC 992.16 Fibre analyser (e.g. Fibretec)	All	Median	Robust SD	%	2
Soluble solids	Refractometer	All	Median	Robust SD	%	2
pH	pH meter	All	Median	Robust SD	-	2
Total acidity	Titration	All	Median	Robust SD	% as citric acid anhydrous	2
Citric acid	HPLC	All	Median	Robust SD	mg/100g	2
Formol number	Titration	All	Median	Robust SD	ml 0.1M NaOH/100 g	2

***Currently not included in LGC's UKAS Scope of Accreditation

Sample PT-FC-812* **Nutritional analysis of mayonnaise**
Supplied as 150g mayonnaise

Analyte	Method	Range	AV	SDPA	Units	DP
Energy	Type 1: Protein+Fat+Total carb, Type 2: Protein+Fat+Available carb+TDF	All	Median	Robust SD	kcal or kJ/100g	0
Fat	Gerber, Soxhlet, acid hydrolysis & Soxhlet, NMR, NIR	All	Median	Robust SD	% (g/100g)	2
Saturates	GC	All	Median	Robust SD	% (g/100g)	2
Total trans fatty acids	GC	All	Median	Robust SD	% (g/100g)	3
Carbohydrate	Total carbohydrate, Available carbohydrate	All	Median	Robust SD	% (g/100g)	2
Total sugars	HPLC, Luff Schoorl, Lane and Eynon	All	Median	Robust SD	% (g/100g)	2
Protein	Dumas, Kjeldahl, NIR (food analyser)	All	Median	Robust SD	% (g/100g)	2
Salt	Determined from chloride, Determined from sodium	All	Median	Robust SD	% (as NaCl)	2
Sodium	Atomic absorption, Flame photometry, Ion chromatography, Titration	All	Median	Robust SD	%	2
pH	pH meter	All	Median	Robust SD	-	2

Cholesterol	GC	All	Median	Robust SD	mg/100g	2

Sample PT-FC-813* ** **Nutritional analysis of mustard**
Supplied as 150g prepared mustard

Analyte	Method	Range	AV	SDPA	Units	DP
Energy	Type 1: Protein+Fat+Total carb, Type 2: Protein+Fat+Available carb+TDF	All	Median	Robust SD	kcal or kJ/100g	0
Fat	Gerber, Soxhlet, acid hydrolysis & Soxhlet, NMR, NIR	All	Median	Robust SD	% (g/100g)	2
Saturates	GC	All	Median	Robust SD	% (g/100g)	2

***Currently not included in LGC's UKAS Scope of Accreditation

Analyte	Method	Range	AV	SDPA	Units	DP
Carbohydrate	Total carbohydrate, Available carbohydrate	All	Median	Robust SD	% (g/100g)	2
Total sugars	HPLC, Luff Schoorl, Lane and Eynon	All	Median	Robust SD	% (g/100g)	2
Protein	Dumas, Kjeldahl, NIR (food analyser)	All	Median	Robust SD	% (g/100g)	2
Salt	Determined from chloride, Determined from sodium	All	Median	Robust SD	% (as NaCl)	2
Total dietary fibre	AOAC 991.43 AOAC 985.29 AOAC 992.16 Fibre analyser (e.g. Fibretec)	All	Median	Robust SD	%	2
pH	pH meter	All	Median	Robust SD	-	2
Total acidity	Titration	All	Median	Robust SD	% as citric acid anhydrous	2

***Currently not included in LGC's UKAS Scope of Accreditation
Sample PT-FC-814* ** **Nutritional analysis of canned fruit**
Supplied as Canned fruit (2 cans are provided)

Analyte	Method	Range	AV	SDPA	Units	DP
Drained weight	Gravimetry	All	Median	Robust SD	g	0
pH	pH meter	All	Median	Robust SD	-	2
Energy	Type 1: Protein+Fat+Total carb, Type 2: Protein+Fat+Available carb+TDF	All	Median	Robust SD	kcal or kJ/100g	0
Carbohydrate	Total carbohydrate, Available carbohydrate	All	Median	Robust SD	% (g/100g)	2
Total sugars	HPLC, Luff Schoorl, Lane and Eynon	All	Median	Robust SD	% (g/100g)	2
Glucose	GC, HPLC	All	Median	Robust SD	% (g/100g)	2
Fructose	GC, HPLC	All	Median	Robust SD	% (g/100g)	2
Total dietary fibre	AOAC 991.43 AOAC 985.29 AOAC 992.16 Fibre analyser (e.g. Fibretec)	All	Median	Robust SD	% (g/100g)	2

Sample PT-FC-815* ** **Chemical parameters in spices**
Supplied as 200g of ground pepper

Analyte	Method	Range	AV	SDPA	Units	DP
Moisture	Drying at 100-105°C Drying at 130°C Drying at 87°C	All	Median	Robust SD	% (m/m)	2
Total ash	Drying at 500°C Drying at 525°C Drying at 550°C	All	Median	Robust SD	% (m/m on dry basis)	2
Crude fibre, insoluble index	EC 152/2009, Fibre analysis (e.g. Fibretec), Gafta method 10:0, ISO 6865	All	Median	Robust SD	% (m/m on dry basis)	2
Volatile oil	Distillation	All	Median	Robust SD	ml/100g on dry basis	2
Piperine content	HPLC	All	Median	Robust SD	% (m/m) on dry basis	2
Acid insoluble ash	Gravimetry	All	Median	Robust SD	% (m/m) on dry basis	2

***Currently not included in LGC's UKAS Scope of Accreditation

Sample PT-FC-816* **Nutritional analysis of dried pasta**
Supplied as 100g ground pasta

Analyte	Method	Range	AV	SDPA	Units	DP
Energy	Type 1: Protein+Fat+Total carb, Type 2: Protein+Fat+Available carb+TDF	All	Median	Robust SD	kcal or kJ/100g	0
Fat	Gerber, Soxhlet, acid hydrolysis & Soxhlet, NMR, NIR	All	Median	Robust SD	% (g/100g)	2
Saturates	GC	All	Median	Robust SD	% (g/100g)	2
Carbohydrate	Total carbohydrate, Available carbohydrate	All	Median	Robust SD	% (g/100g)	2
Analyte	**Method**	**Range**	**AV**	**SDPA**	**Units**	**DP**
Total sugars	HPLC, Luff Schoorl, Lane and Eynon	All	Median	Robust SD	% (g/100g)	2
Protein	Dumas, Kjeldahl, NIR (food analyser)	All	Median	Robust SD	% (g/100g)	2
Ash	Drying at 500°C Drying at 525°C Drying at 550°C	All	Median	Robust SD	% (g/100g)	2
Moisture	Drying at 100-105°C Drying at 130°C Drying at 87°C	All	Median	Robust SD	% (g/100g)	2
Total dietary fibre	AOAC 991.43 AOAC 985.29 AOAC 992.16 Fibre analyser (e.g. Fibretec)	All	Median	Robust SD	% (g/100g)	2

Sample PT-FC-817* **Composition and quality in jam and marmalade**
Supplied as 200g jam or marmalade

Analyte	Method	Range	AV	SDPA	Units	DP
Energy	Type 1: Protein+Fat+Total carb, Type 2: Protein+Fat+Available carb+TDF	All	Median	Robust SD	kcal or kJ/100g	0
Fat	Gerber, Soxhlet, acid hydrolysis & Soxhlet, NMR, NIR	All	Median	Robust SD	% (g/100g)	2

Carbohydrate	Total carbohydrate, Available carbohydrate	All	Median	Robust SD	% (g/100g)	2
Protein	Dumas, Kjeldahl, NIR (food analyser)	All	Median	Robust SD	% (g/100g)	2
Total sugars	HPLC, Luff Schoorl, Lane and Eynon	All	Median	Robust SD	% (g/100g)	2
Fructose	HPLC, GC	All	Median	Robust SD	% (g/100g)	2
Glucose	HPLC, GC	All	Median	Robust SD	% (g/100g)	2
Soluble solids	Refractometer	All	Median	Robust SD	%	2
pH	pH meter	All	Median	Robust SD	-	2
Moisture	Refractometer Oven drying	All	Median	Robust SD	%	2
Ash	Drying at 500°C Drying at 525°C Drying at 550°C	All	Median	Robust SD	%	3
Total acidity	Titration	All	Median	Robust SD	% as citric acid anhydrous	2
Brix	Densitometer, refractometer	All	Median	Robust SD	%	2

Sample PT-FC-818* **Foreign bodies in food products**
Supplied as Sample A / Sample B (both potentially contaminated)

Analyte	Method	Range	AV	SDPA	Units	DP
Presence/ absence	Microscopy, X-ray, SEM, ultrasonic imaging, NMR, MRI, Hyperspectral imaging, Thermal imaging	All	Formulation	N/A	-	-
Identification of foreign body	All	-	Formulation	N/A	-	-

The test material provided may contain one or more of the following foreign bodies: plastic/glass/metal

Sample PT-FC-819* **Chemical analysis of table salt**
Supplied as 300g table salt

Analyte	Method	Range	AV	SDPA	Units	DP
Purity	Calculation, Precipitation of NaCl	All	Median	Robust SD	% as NaCl on dry basis	1
Moisture	Drying at 100-105°C Drying at 130°C Drying at 87°C	All	Median	Robust SD	%	2
Sulfate	HP-Ion chromatography	All	Median	Robust SD	mg/kg	2
Iodine	Titration, Ion Selective electrode	All	Median	Robust SD	mg Iodine/kg	2
Calcium	ICP-OES	All	Median	Robust SD	mg/kg	0
Magnesium	ICP-OES	All	Median	Robust SD	mg/kg	0
Total Arsenic	GFAAS, ICP-MS, ICP-OES, Ag-DDTC photometric	All	Median	Robust SD	mg/kg	3
Lead	AAS, ICP-MS, ICP-OES	All	Median	Robust SD	mg/kg	3
Cadmium	AAS, ICP-MS, ICP-OES	All	Median	Robust SD	mg/kg	3
Mercury	AAS, ICP-MS, ICP-OES	All	Median	Robust SD	mg/kg	3
Copper	GFAAS, ICP-MS, ICP-OES, ZBEC photometric	All	Median	Robust SD	mg/kg	2
Ferrocyanides	Spectrophotometry, HPLC,	All	Median	Robust SD	mg/kg (expressed as	2

					anhydrous potassium ferrocyanide)	

Sample PT-FC-820* **Lactose (low levels) in food products**
Supplied as 100g food product

Analyte	Method	Range	AV	SDPA	Units	DP
Lactose	Ion chromatography, HP-AEC	<1g/100g	Median	Robust SD	% (g/100g)	3

***Currently not included in LGC's UKAS Scope of Accreditation

Sample PT-FC-821* **Nutritional analysis of dehydrated food products**
Supplied as 150g of dehydrated food product (e.g. instant noodles)

Analyte	Method	Range	AV	SDPA	Units	DP
Energy	Type 1: Protein+Fat+Total carb, Type 2: Protein+Fat+Available carb+TDF	All	Median	Robust SD	kcal or kJ/100g	0
Fat	Soxhlet, acid hydrolysis & Soxhlet, NMR, NIR	All	Median	Robust SD	% (g/100g)	2
Saturates	GC	All	Median	Robust SD	% (g/100g)	2
Total trans fatty acids	GC	All	Median	Robust SD	% (g/100g)	3
Carbohydrate	Total carbohydrate, Available carbohydrate	All	Median	Robust SD	% (g/100g)	2
Total sugars	HPLC, Luff Schoorl, Lane and Eynon	All	Median	Robust SD	% (g/100g)	2
Protein	Dumas, Kjeldahl, NIR (food analyser)	All	Median	Robust SD	% (g/100g)	2
Salt	Determined from chloride Determined from sodium	All	Median	Robust SD	% (as NaCl)	2
Analyte	**Method**	**Range**	**AV**	**SDPA**	**Units**	**DP**
Sodium	Atomic absorption, Flame Photometry, Ion chromatography, Titration	All	Median	Robust SD	%	2
Cholesterol	GC	All	Median	Robust SD	mg/100g	2

Sample PT-FC-822* **Vinegar quality analysis**
Supplied as 100ml of vinegar

Analyte	Method	Range	AV	SDPA	Units	DP
Total acidity	Titration	All	Median	Robust SD	% acetic acid	2
Total ash	Drying at 500°C Drying at 525°C Drying at 550°C	All	Median	Robust SD	%	2
Density	Densitometer	All	Median	Robust SD	g/ml	5
Total dry extract	Gravimetry	All	Median	Robust SD	%	2
Volatile acidity	Calculation	All	Median	Robust SD	% acetic acid	2
pH	pH meter	All	Median	Robust SD	-	2

Sample PT-FC-823* **Amino acid profile in infant formula powder**
Supplied as 50g of infant formula powder

Analyte	Method	Range	AV	SDPA	Units	DP
Alanine (free)		All	Median	Robust SD	g/100g	3

Arginine (free)	HPLC (post column), HPLC (pre-column), IEC	All	Median	Robust SD	g/100g	3
Aspartic acid (free)		All	Median	Robust SD	g/100g	3
Glutamic acid (free)		All	Median	Robust SD	g/100g	2
Glycine (free)		All	Median	Robust SD	g/100g	2
Histidine (free)		All	Median	Robust SD	g/100g	3
Isoleucine (free)		All	Median	Robust SD	g/100g	2
Leucine (free)		All	Median	Robust SD	g/100g	2
Lysine (free)		All	Median	Robust SD	g/100g	2
Phenylalanine (free)		All	Median	Robust SD	g/100g	3
Proline (free)		All	Median	Robust SD	g/100g	2
Serine (free)	HPLC (post column), HPLC (pre-column), IEC	All	Median	Robust SD	g/100g	3
Threonine (free)		All	Median	Robust SD	g/100g	3
Tyrosine (free)		All	Median	Robust SD	g/100g	3
Valine (free)		All	Median	Robust SD	g/100g	3
Cystein & Cystine (sum of)		All	Median	Robust SD	g/100g	3
Methionine (free)		All	Median	Robust SD	g/100g	3
Tryptophan (total)		All	Median	Robust SD	g/100g	3

***Currently not included in LGC's UKAS Scope of Accreditation

Sample PT-FC-824* **Instant coffee quality parameters**
Supplied as 200g instant coffee

Analyte	Method	Range	AV	SDPA	Units	DP
Moisture	Karl Fischer	All	Median	Robust SD	%	2
Solubility in cold water at 16±2C°	IS 2791	All	Median	-	-	-
Fat	Acid hydrolysis & Soxhlet, NIR (food analyser), Soxhlet,	All	Median	Robust SD	% (g/100g)	2
Carbohydrate	Available carbohydrate Total carbohydrate	All	Median	Robust SD	% (g/100g)	2
Total Glucose	AOAC Method 995.13, ISO 24114:2011, Titration	All	Median	Robust SD	% (g/100g)	2
Total Xylose	AOAC Method 995.13, ISO 24114:2011, Titration	All	Median	Robust SD	% (g/100g)	2
Protein	Dumas, Kjeldahl, NIR (food analyser)	All	Median	Robust SD	% (g/100g)	2
Total dietary fibre	AOAC 985.29, AOAC 991.43, AOAC 992.16	All	Median	Robust SD	% (g/100g)	2
Ash	Drying at 500°C, Drying at 525°C Drying at 550°C	All	Median	Robust SD	% (g/100g)	2
pH	pH meter	All	Median	Robust SD	-	2
Total chlorogenic acids	HPLC	All	Median	Robust SD	mg/g	2
Caffeine	HPLC	All	Median	Robust SD	mg/g	2

Sample PT-FC-825* **Authenticity of herbs and spices**
Supplied as 15g dried herb or spice

Analyte	Method	Range	AV	SDPA	Units	DP
Confirmation of authenticity	Microscopy, MS, NGS, FTIR, SCIO	N/A	-	-	-	-
Additional questions	Would you consider this sample [oregano/black pepper] to satisfy your specification for authenticity? If you consider this sample as not authentic, what adulterant have you detected? What is the specification assessment based on?					

Sample PT-FC-826* **Capsaicinoids and heat units in chilli powder or chilli sauce**
Supplied as 20g dried chilli powder or chilli sauce

Analyte	Method	Range	AV	SDPA	Units	DP
Capsaicin	HPLC	All	Median	Robust SD	mg/kg	0
Dihydrocapsaicin	HPLC	All	Median	Robust SD	mg/kg	0
Nordihydrocapsaicin	HPLC	All	Median	Robust SD	mg/kg	1
Heat unit	Calculation	All	Median	Robust SD	Scoville unit	0

***Currently not included in LGC's UKAS Scope of Accreditation

Sample PT-FC-827* **Elements in infant fruit/vegetable purée**
Supplied as 20g infant fruit/vegetable purée

Analyte	Method	Range	AV	SDPA	Units	DP
Total arsenic	AAS, ICP-OES, ICP-MS	All	Median	Robust SD	mg/kg	3
Inorganic arsenic[1]	AAS, ICP-OES, ICP-MS	All	Median	Robust SD	mg/kg	3
Cadmium	AAS, ICP-OES, ICP-MS	All	Median	Robust SD	mg/kg	3
Lead	AAS, ICP-OES, ICP-MS	All	Median	Robust SD	mg/kg	3

[1]Sum of As (III) and As (V)

Sample PT-FC-828* **Nutritional analysis of processed nuts**
Supplied as 150g processed nut product (e.g. salted peanuts)

Analyte	Method	Range	AV	SDPA	Units	DP
Energy	Type 1: Protein+Fat+Total carb, Type 2: Protein+Fat+Available carb+TDF	All	Median	Robust SD	kcal or kJ/100g	0
Fat	Gerber, Soxhlet, acid hydrolysis & Soxhlet, NMR, NIR	All	Median	Robust SD	% (g/100g)	2
Saturates	GC	All	Median	Robust SD	% (g/100g)	2
Carbohydrate	Total carbohydrate, Available carbohydrate	All	Median	Robust SD	% (g/100g)	2
Total sugars	HPLC, Luff Schoorl, Lane and Eynon	All	Median	Robust SD	% (g/100g)	2
Protein	Dumas, Kjeldahl, NIR (food analyser)	All	Median	Robust SD	% (g/100g)	2
Salt	Determined from chloride, Determined from sodium	All	Median	Robust SD	% (as NaCl)	2
Sodium	Atomic absorption, Flame photometry, Ion chromatography, Titration	All	Median	Robust SD	% (as Na)	2

Moisture	Oven drying	All	Median	Robust SD	% (g/100g)	2

Sample PT-FC-829* ** **Tea quality parameters**
Supplied as 100g dried tea

Analyte	Method	Range	AV	SDPA	Units	DP
Water extract	ISO 9768	All	Median	Robust SD	% (g/100g)	2
Total Ash	Gravimetry	All	Median	Robust SD	% (g/100g)	2
Water soluble Ash	ISO 1576:1988, Calculation	All	Median	Robust SD	% (g/100g)	2
Crude fibre	ISO 5498-1981	All	Median	Robust SD	% (g/100g)	2
Moisture	Oven drying	All	Median	Robust SD	% (g/100g)	2
Caffeine	HPLC	All	Median	Robust SD	mg/g	2

Sample PT-FC-830* ** **Vitamin C in fruit/vegetable purée**
Supplied as 20g fruit/vegetable purée

Analyte	Method	Range	AV	SDPA	Units	DP
Vitamin C (as ascorbic acid)	HPLC, Titration	All	Median	Robust SD	mg/kg	2

***Currently not included in LGC's UKAS Scope of Accreditation

Sample PT-FC-831* ** **Opiates in poppy seeds**
Supplied as 15g ground poppy seeds

Analyte	Method	Range	AV	SDPA	Units	DP
Morphine	GC-MS, LC-MS, HPLC	All	Median	Robust SD	mg/kg	2
Codeine	GC-MS, LC-MS, HPLC	All	Median	Robust SD	mg/kg	2

Sample PT-FC-832 **Nutritional analysis of non-wheat flour**
Supplied as 100g non-wheat flour (e.g. tapioca flour, potato flour or maize flour)

Analyte	Method	Range	AV	SDPA	Units	DP
Fat	Acid hydrolysis and Soxhlet NIR Soxhlet	All	Median	25% of AV	% (g/100g)	2
Protein	Dumas Kjeldahl NIR (food analyser)	All	Median	0.30	% (g/100g)	2
Total dietary fibre	All	All	Median	-	% (g/100g)	2
Ash	Drying at 500°C Drying at 525°C Drying at 550°C	All	Median	0.20	% (g/100g)	2
Moisture	Drying at 100-105°C Drying at 130°C Drying at 87°C	All	Median	0.50	% (g/100g)	2
Calcium	AAS, Colorimetry, Flame photometry, ICP-MS, ICP-OES, Ion chromatography, Titration	All	Median	15% of AV	mg/100g	2

Sample PT-FC-833* ** **Nutritional analysis of baby food purée**

Supplied as 150g of food purée

Analyte	Method	Range	AV	SDPA	Units	DP
Energy	Type 1: Protein+Fat+Total carb, Type 2: Protein+Fat+Available carb+TDF	All	Median	Robust SD	kcal or kJ/100g	0
Fat	Gerber, Soxhlet, Acid hydrolysis & Soxhlet, NMR, NIR	All	Median	Robust SD	% (g/100g)	2
Saturates	GC	All	Median	Robust SD	% (g/100g)	2
Carbohydrate	Total carbohydrate, Available carbohydrate	All	Median	Robust SD	% (g/100g)	2
Total sugars	HPLC, Luff Schoorl, Lane and Eynon	All	Median	Robust SD	% (g/100g)	2
Protein	Dumas, Kjeldahl, NIR (food analyser)	All	Median	Robust SD	% (g/100g)	2
Total dietary fibre	All	All	Median	-	%	2
Salt	Determined from chloride, Determined from sodium	All	Median	Robust SD	% (as NaCl)	2
Sodium	Atomic absorption, Flame photometry, Ion chromatography, Titration	All	Median	Robust SD	%	2

***Currently not included in LGC's UKAS Scope of Accreditation

Sample PT-FC-834* ** **Nutritional analysis and fatty acids in potato crisps**
Supplied as 100g of blended potato crisps

Analyte	Method	Range	AV	SDPA	Units	DP
Energy	Type 1: Protein+Fat+Total carb, Type 2: Protein+Fat+Available carb+TDF	All	Median	Robust SD	kcal or kJ/100g	0
Fat	Gerber, Soxhlet, Acid hydrolysis & Soxhlet, NMR, NIR	All	Median	Robust SD	% (g/100g)	2
Saturates	GC	All	Median	Robust SD	% (g/100g)	2
Monounsaturates	GC	All	Median	Robust SD	% (g/100g)	2
Polyunsaturates	GC	All	Median	Robust SD	% (g/100g)	2
Total trans fatty acids	GC	All	Median	Robust SD	% (g/100g)	3
Carbohydrate	Total carbohydrate, Available carbohydrate	All	Median	Robust SD	% (g/100g)	2
Total sugars	HPLC, Luff Schoorl, Lane and Eynon	All	Median	Robust SD	% (g/100g)	2
Protein	Dumas, Kjeldahl, NIR (food analyser)	All	Median	Robust SD	% (g/100g)	2
Total dietary fibre	All	All	Median	-	%	2
Salt	Determined from chloride, Determined from sodium	All	Median	Robust SD	% (as NaCl)	2
Sodium	Atomic absorption, Flame photometry, Ion chromatography, Titration	All	Median	Robust SD	%	2
Moisture	Oven drying	All	Median	Robust SD	% (g/100g)	2

Sample PT-FC-835* ** **Nutritional analysis and fatty acids in tortilla chips**
Supplied as 100g of blended tortilla chips

Analyte	Method	Range	AV	SDPA	Units	DP
Energy	Type 1: Protein+Fat+Total carb, Type 2: Protein+Fat+Available carb+TDF	All	Median	Robust SD	kcal or kJ/100g	0
Fat	Gerber, Soxhlet, Acid hydrolysis & Soxhlet, NMR, NIR	All	Median	Robust SD	% (g/100g)	2
Saturates	GC	All	Median	Robust SD	% (g/100g)	2

Monounsaturates	GC	All	Median	Robust SD	% (g/100g)	2
Polyunsaturates	GC	All	Median	Robust SD	% (g/100g)	2
Total trans fatty acids	GC	All	Median	Robust SD	% (g/100g)	3
Carbohydrate	Total carbohydrate, Available carbohydrate	All	Median	Robust SD	% (g/100g)	2
Total sugars	HPLC, Luff Schoorl, Lane and Eynon	All	Median	Robust SD	% (g/100g)	2
Protein	Dumas, Kjeldahl, NIR (food analyser)	All	Median	Robust SD	% (g/100g)	2
Total dietary fibre	All	All	Median	-	%	2
Salt	Determined from chloride, Determined from sodium	All	Median	Robust SD	% (as NaCl)	2
Sodium	Atomic absorption, Flame photometry, Ion chromatography, Titration	All	Median	Robust SD	%	2
Moisture	Oven drying	All	Median	Robust SD	% (g/100g)	2

Sample PT-FC-836 **Pesticides in pome fruits**
Supplied as 100g of material containing up to 20 quantifiable pesticides (from Appendix B)
100g blank

Analyte	Method	Range	AV	SDPA	Units	DP
Pesticides	GC-ECD, GC-MS, GC-MS/MS, HPLC, LC-MS, LC-MS/MS	All	Median	25% of AV	µg/kg	1

Sample PT-FC-837 **Pesticides in citrus fruits**
Supplied as 100g of material containing up to 20 quantifiable pesticides (from Appendix B)
100g blank

Analyte	Method	Range	AV	SDPA	Units	DP
Pesticides	GC-ECD, GC-MS, GC-MS/MS, HPLC, LC-MS, LC-MS/MS	All	Median	25% of AV	µg/kg	1

Sample PT-FC-838 **Pesticides in fruiting vegetables**
Supplied as 100g of material containing up to 20 quantifiable pesticides (from Appendix B)
100g blank

Analyte	Method	Range	AV	SDPA	Units	DP
Pesticides	GC-ECD, GC-MS, GC-MS/MS, HPLC, LC-MS, LC-MS/MS	All	Median	25% of AV	µg/kg	1

Sample PT-FC-839 **Pesticides in root and tuber vegetables**
Supplied as 100g of material containing up to 20 quantifiable pesticides (from Appendix B)
100g blank

Analyte	Method	Range	AV	SDPA	Units	DP
Pesticides	GC-ECD, GC-MS, GC-MS/MS, HPLC, LC-MS, LC-MS/MS	All	Median	25% of AV	µg/kg	1

Sample PT-FC-840* **Pesticides in pulses**
Supplied as 50g of material containing up to 20 quantifiable pesticides (from Appendix B)
50g blank

Analyte	Method	Range	AV	SDPA	Units	DP
Pesticides	GC-ECD, GC-MS, GC-MS/MS, HPLC, LC-MS, LC-MS/MS	All	Median	25% of AV	µg/kg	1

Sample PT-FC-841* **Pesticides in cereals**
Supplied as 50g of material containing up to 20 quantifiable pesticides (from Appendix B)
50g blank

Analyte	Method	Range	AV	SDPA	Units	DP
Pesticides	GC-ECD, GC-MS, GC-MS/MS, HPLC, LC-MS, LC-MS/MS	All	Median	25% of AV	µg/kg	1

***Currently not included in LGC's UKAS Scope of Accreditation

Sample PT-FC-842* **Pesticides in vegetable, seed oil and olive oils**
Supplied as 50g of material containing up to 20 quantifiable pesticides (from Appendix B)
50g blank

Analyte	Method	Range	AV	SDPA	Units	DP
Pesticides	GC-ECD, GC-MS, GC-MS/MS, HPLC, LC-MS, LC-MS/MS	All	Median	25% of AV	µg/kg	1

Sample PT-FC-843* **Pesticides in spices**
Supplied as 50g of material containing up to 20 quantifiable pesticides (from Appendix B)
50g blank

Analyte	Method	Range	AV	SDPA	Units	DP
Pesticides	GC-ECD, GC-MS, GC-MS/MS, HPLC, LC-MS, LC-MS/MS	All	Median	25% of AV	µg/kg	1

Sample PT-FC-844 **Pesticides in fungi (mushrooms)**
Supplied as 100g of material containing up to 20 quantifiable pesticides (from Appendix B)
100g blank

Analyte	Method	Range	AV	SDPA	Units	DP
Pesticides	GC-ECD, GC-MS, GC-MS/MS, HPLC, LC-MS, LC-MS/MS	All	Median	25% of AV	µg/kg	1

**A blank matrix is provided for laboratories that require a spiked quality control material to be run alongside samples being assessed. Results are not required to be returned for the blank matrix provided.
Participants will be required to screen the sample provided and report the presence of any pesticides found above their routine reporting limits. Each pesticide detected in the sample should also be quantified.

Sample PT-FC-845* **Mycotoxins in rice**
Supplied as 100g of ground rice

Analyte	Method	Range	AV	SDPA	Units	DP

Aflatoxins B_1, B_2, G_1, G_2	HPLC, ELISA, LC-MS/MS	All	Median	25% of AV	µg/kg	2
Total aflatoxins	HPLC, ELISA, LC-MS/MS	All	Median	25% of AV	µg/kg	2
Ochratoxin A	HPLC, ELISA, LC-MS/MS	All	Median	25% of AV	µg/kg	2
Zearalenone	HPLC, ELISA, LC-MS/MS	All	Median	Robust SD	µg/kg	2

Sample PT-FC-846* ** **Food labelling benchmark exercise and declaration of nutritional values**
Supplied as Paper exercise

Analyte	Method	Range	AV	SDPA	Units	DP
Assessment to European Union Food law or equivalent	N/A	N/A	Expert/Consensus	N/A	N/A	N/A

Sample PT-FC-847* ** **Authenticity of honey by NMR profiling**
Supplied as 5g honey

Analyte	Method	Range	AV	SDPA	Units	DP
Confirmation of authenticity	NMR	N/A	N/A	N/A	N/A	N/A

Sample PT-FC-848* ** **Vegan food**
Supplied as 10g of material

Analyte	Method	Range	AV	SDPA	Units	DP
Presence or absence of animal DNA	RT-PCR	Qualitative	-	N/A	N/A	N/A

Sample PT-FC-849* ** **Cannabidiol (CBD) in food**
Supplied as To be confirmed, please contact LGC for further details

Analyte	Method	Range	AV	SDPA	Units	DP
Cannabidiol	UHPLC, GC/FID, GC MS	All	Median	Robust SD	mg/g	2

Sample PT-FC-850* ** **Vanillin in vanilla extract**
Supplied as 5ml of vanilla extract

Analyte	Method	Range	AV	SDPA	Units	DP
Vanillin	UHPLC, HPLC, GC-MS, Spectrophotometry	All	Median	Robust SD	mg/kg	1

Sample PT-FC-851* ** **Gluten in pasta sauce (low in gluten)**

Supplied as 25g of material

Analyte	Method	Range	AV	SDPA	Units	DP
Gluten	ELISA, PCR, LC-MS/MS	All	Median	Robust SD	mg/kg	2

Sample PT-FC-852* ** **Gluten and egg white in canned meat (allergen testing)**
Supplied as 20g of material

Analyte	Method	Range	AV	SDPA	Units	DP
Gluten	ELISA, PCR, LC-MS/MS	All	Median	Robust SD	mg/kg	2
Egg white protein	ELISA, PCR, LC-MS/MS	All	Median	Robust SD	mg/kg	2

***Currently not included in LGC's UKAS Scope of Accreditation

Sample PT-FC-853* ** **Soya and milk protein in non-dairy milk (allergen testing)**
Supplied as 25ml of material

Analyte	Method	Range	AV	SDPA	Units	DP
Soy	ELISA, PCR, LC-MS/MS	All	Median	Robust SD	mg/kg	2
Milk protein	ELISA, PCR, LC-MS/MS	All	Median	Robust SD	mg/kg	2

Sample PT-FC-854* ** **Gluten, egg white and milk protein in biscuits (allergen testing)**
Supplied as To be confirmed, please contact LGC for further details

Analyte	Method	Range	AV	SDPA	Units	DP
Gluten	ELISA, PCR, LC-MS/MS	All	Median	Robust SD	mg/kg	2
Egg white protein	ELISA, PCR, LC-MS/MS	All	Median	Robust SD	mg/kg	2
Milk protein	ELISA, PCR, LC-MS/MS	All	Median	Robust SD	mg/kg	2

Sample PT-FC-855* ** **Gluten in swabs (allergen testing)**
Supplied as Surface to swab

Analyte	Method	Range	AV	SDPA	Units	DP
Gluten	Lateral flow methods	All	-	-	Qualitative	-

Sample PT-FC-856* ** **Pickles**
Supplied as 100g of pickled cucumbers

Analyte	Method	Range	AV	SDPA	Units	DP
pH	pH meter	All	Median	Robust SD	-	2
Total Acidity	Titration	All	Median	Robust SD	% acetic acid	2
Calcium Chloride	Titration	All	Median	Robust SD	% Calcium Chloride	2

Salt	Determined from chloride, Determined from sodium	All	Median	Robust SD	% (as NaCl)	2

Sample PT-FC-857* **Ethylene oxide in food products e.g., sesame**
Supplied as 10g of food product e.g., sesame

Analyte	Method	Range	AV	SDPA	Units	DP
Ethylene oxide as a sum of ethylene oxide and 2-CE	GC/MS/MS, LC-ESI-MS/MS	All	Median	Robust SD	mg/kg	2

***Currently not included in LGC's UKAS Scope of Accreditation

Sample PT-FC-858* **Relish**
Supplied as 100g relish

Analyte	Method	Range	AV	SDPA	Units	DP
pH	pH meter	All	Median	Robust SD	-	2
Brix	Densitometer, refractometer	All	Median	Robust SD	%	2
Total Acidity	Titration	All	Median	Robust SD	% acetic acid	2
Salt	Determined from chloride, Determined from sodium	All	Median	Robust SD	% (as NaCl)	2

Sample PT-FC-859* **Analysis of candy**
Supplied as 25g of candy

Analyte	Method	Range	AV	SDPA	Units	DP
Moisture	Oven drying, Karl Fischer	All	Median	Robust SD	% (g/100g)	2
Total Acidity	Titration	All	Median	Robust SD	ml 0.1N NaOH/g	2

Sample PT-FC-860* **Analysis of chewing gum**
Supplied as 25g of chewing gum

Analyte	Method	Range	AV	SDPA	Units	DP
Moisture	Oven drying, Karl Fischer	All	Median	Robust SD	% (g/100g)	2
Total Acidity	Titration	All	Median	Robust SD	ml 0.1N NaOH/g	2

Sample PT-FC-861* **Garlic composition and quality**
Supplied as 150g of garlic powder

Analyte	Method	Range	AV	SDPA	Units	DP

Moisture	Oven drying	All	Median	Robust SD	% (g/100g)	2
Sulfur dioxide	Distillation (Monier Williams), Ion chromatography	All	Median	Robust SD	mg/kg	1
Allicin	HPLC-UV GC-MS	All	Median	Robust SD	mg/g	2
Ash (total)	Drying at 500°C Drying at 525°C Drying at 550°C	All	Median	0.10	%	2
Acid insoluble ash	Drying at 550°C	All	Median	Robust SD	%	3

***Currently not included in LGC's UKAS Scope of Accreditation

Sample PT-FC-862* **Peanut butter composition and quality**
Supplied as 50g of peanut butter

Analyte	Method	Range	AV	SDPA	Units	DP
Fat	Soxhlet, Acid hydrolysis & Soxhlet, NMR, NIR	All	Median	Robust SD	% (g/100g)	2
Salt	Determined from chloride, Determined from sodium	All	Median	Robust SD	% (as NaCl)	2
Moisture	Oven drying	All	Median	Robust SD	% (g/100g)	2

Sample PT-FC-863* **Organic acids (additives) in confectionery and bakery products**
Supplied as 100g of product

Analyte	Method	Range	AV	SDPA	Units	DP
Propionic acid (E280)	GC, HPLC, LC-MS/MS, Titration	All	Median	Robust SD	mg/kg	0
Sorbic acid (E200)		All	Median	Robust SD	mg/kg	0
Benzoic acid (E210)		All	Median	Robust SD	mg/kg	0
Citric acid (E330)		All	Median	Robust SD	mg/kg	0
Tartaric acid (E334)		All	Median	Robust SD	mg/kg	0
Acetic acid (E260)		All	Median	Robust SD	mg/kg	0
Malic acid (E296)		All	Median	Robust SD	mg/kg	0
Butyric acid		All	Median	Robust SD	mg/kg	0

The presence of the analytes is material dependent and decimal places may be subject to alteration

Sample PT-FC-864* **Vitamin A and colour in tomato paste**
Supplied as 25g of tomato paste

Analyte	Method	Range	AV	SDPA	Units	DP
Vitamin A	HPLC, Spectrophotometry	All	Median	Robust SD	µg retinol/100g	1
Colour	Lovibond, path length 1" Lovibond, path length 5.25" Lovibond, path length 5.5"	-	Median	Robust SD	Lovibond	1

Sample PT-FC-865* **Moisture in green coffee**
Supplied as 25g of green coffee

Analyte	Method	Range	AV	SDPA	Units	DP
Moisture	ISO 6673:2003 Loss in mass at 105 °C	All	Median	Robust SD	%	2

***Currently not included in LGC's UKAS Scope of Accreditation

Sample PT-FC-866* **Elements in ground pepper**
Supplied as 10g of ground pepper

Analyte	Method	Range	AV	SDPA	Units	DP
Total arsenic	AAS, ICP-MS, ICP-OES	All	Median	Robust SD	mg/kg	3
Cadmium	AAS, ICP-MS, ICP-OES	All	Median	Robust SD	mg/kg	3
Lead	AAS, ICP-MS, ICP-OES	All	Median	Robust SD	mg/kg	3
Mercury	AAS, ICP-MS	All	Median	Robust SD	mg/kg	3

Sample PT-FC-867* **Mycotoxins in corn**
Supplied as 100g of ground corn (maize flour)

Analyte	Method	Range	AV	SDPA	Units	DP
Aflatoxins B_1, B_2, G_1, G_2	HPLC, ELISA, LC-MS/MS	All	Median	25% of AV	µg/kg	2
Total aflatoxins	HPLC, ELISA, LC-MS/MS	All	Median	25% of AV	µg/kg	2
Ochratoxin A	HPLC, ELISA, LC-MS/MS	All	Median	25% of AV	µg/kg	2
Zearalenone	HPLC, ELISA, LC-MS/MS	All	Median	Robust SD	µg/kg	2

Sample PT-FC-868* **Ethylene oxide in spices**
Supplied as 20g of food product e.g., ground ginger

Analyte	Method	Range	AV	SDPA	Units	DP
Ethylene oxide as a sum of ethylene oxide and 2-CE	GC/MS/MS, LC-ESI-MS/MS	All	Median	Robust SD	mg/kg	2

***Currently not included in LGC's UKAS Scope of Accreditation

APPENDIX B - Potential pesticides residues (parent compounds only unless stated)
Sample 836 to 844

2,4-D (94-75-7)
2-phenylphenol (90-43-7)
Abamectin (71751-41-2)
Acephate (30560-19-1)
Acetamiprid (135410-20-7)
Acetochlor (34256-82-1)
Acrinathrin (101007-06-1)
Alachlor (15972-60-8)
Aldicarb[1] (116-06-3)
Aldrin (309-00-2)
Aminocarb (2032-59-9)
Amitraz (33089-61-1)
Asulam (3337-71-1)
Atrazine (1912-24-9)
Azinphos-ethyl (2642-71-9)
Azinphos-methyl (86-50-0)
Azoxystrobin (131860-33-8)
Benalaxyl (71626-11-4)
Benfuracarb (82560-54-1)
Benthiavalicarb-isopropyl (177406-68-7)
Bifenthrin (82657-04-3)
Biphenyl (92-52-4)
Bitertanol (55179-31-2)
Boscalid (188425-85-6)
Bromophos-ethyl (4824-78-6)
Bromophos-methyl (2104-96-3)
Bromopropylate (18181-80-1)
Bromoxynil (1689-84-5)
Bromuconazole (116255-48-2)
Bupirimate (41483-43-6)
Buprofezin (953030-84-7)
Cadusafos (95465-99-9)
Captan (133-06-2)
Carbaryl (63-25-2)
Carbendazim (10605-21-7)
Carbofuran (1563-66-2)
Carbophenothion (786-19-6)
Chlorantraniliprole (500008-45-7)
Chlordane (cis) (5103-71-9)
Chlordane (trans) (5103-74-2)
Chlorfenapyr (122453-73-0)
Chlorfenvinphos (470-90-6)
Chloridazon (1698-60-8)
Chlorobenzilate (510-15-6)
Chlorothalonil (1897-45-6)
Chlorpropham (101-21-3)
Chlorpyrifos (2921-88-2)
Chlorpyrifos-methyl (5598-13-0)
Chlorthal-dimethyl (1861-32-1)
Chlorthiophos (60238-56-4)
Chlortoluron (15545-48-9)
Clofentezine (74115-24-5)
Clomazone (81777-89-1)
Clothianidin (210880-92-5)
Cyanazine (21725-46-2)
Cyanophenphos (13067-93-1)
Cycloxydim (101205-02-1)
Cyfluthrin (68085-85-8)
Cymoxanil (57966-95-7)
Cypermethrin[5] (52315-07-8)
Cyproconazole (94361-06-5)
Cyprodinil (121552-61-2)
Cyromazine (66215-27-8)
DDT[4] (50-29-3)
Deltamethrin (52918-63-5)
Diazinon (333-41-5)
Dichlobenil (1194-65-6)
Dichlobutrazole (75736-33-3)
Dichlofenthion (97-17-6)
Dichlofluanid (1085-98-9)
Dichlorvos (62-73-7)
Dicloran (99-30-9)
Dicofol (115-32-2)
Dieldrin (60-57-1)
Difenoconazole (119446-68-3)
Diflubenzuron (35367-38-5)
Diflufenican (83164-33-4)
Dimethoate (60-51-5)
Dimethomorph[5] (110488-70-5)
Dimoxystrobin (149961-52-4)
Dinotefuran (165252-70-0)
Diphenylamine (122-39-4)
Diuron (330-54-1)
Endosulfan[3] (115-29-7)
Epoxiconazole (133855-98-8)
Ethiofencarb[1] (29973-13-5)
Ethion (563-12-2)
Ethofumesate (26225-79-6)
Ethoprophos (13194-48-4)
Etrimfos (38260-54-7)
Fenamidone (161326-34-7)
Fenamiphos (22224-92-6)
Fenarimol (60168-88-9)
Fenazaquin (120928-09-8)
Fenbuconazole (114369-43-6)
Fenhexamid (126833-17-8)
Fenitrothion (122-14-5)
Fenoxycarb (72490-01-8)
Fenpropathrin (39515-41-8)
Fenpropimorph (67564-91-4)
Fenpyroximate (111812-58-9)
Fenthion[1] (55-38-9)
Fenvalerate (51630-58-1)
Fipronil[2] (120068-37-3)
Fluazinam (79622-59-6)
Flubendiamide (272451-65-7)
Flucythrinate (70124-77-5)
Fludioxonil (131341-86-1)
Flufenoxuron (101463-69-8)
Fluopicolide (239110-15-7)
Fluoxastrobin (361377-29-9)
Flurochloridone (61213-25-0)
Fluroxypyr (69377-81-7)
Flusilazole (85509-19-9)
Flutriafol (76674-21-0)
Fluvalinate-tau (102851-06-9)
Folpet (133-07-3)
Fonofos (944-22-9)
Fosthiazate (98886-44-3)
Furalaxyl (57646-30-7)
Furathiocarb (65907-30-4)
HCH-alpha (319-84-6)
HCH-beta (319-85-7)
HCH-delta (319-86-8)
Heptachlor (76-44-8)
Heptenophos (23560-59-0)
Hexachlorobenzene (118-74-1)
Hexaconazole (79983-71-4)
Hexazinone (51235-04-2)
Hexythiazox (78587-05-0)
Imazalil (35554-44-0)
Imidacloprid (138261-41-3)
Indoxacarb (144171-61-9)
Ioxynil (1689-83-4)
Iprodione (36734-19-7)
Iprovalicarb (140923-17-7)
Isocarbofos (24353-61-5)
Isodrin (465-73-6)
Isofenphos (25311-71-1)
Isofenphos-methyl (99675-03-3)
Isoproturon (34123-59-6)
Isoxaben (82558-50-7)
Kresoxim-methyl (143390-89-0)
Lambda-cyhalothrin (91465-08-6)
Lenacil (2164-08-1)
Lindane (58-89-9)
Linuron (330-55-2)
Lufenuron (103055-07-8)
Malathion (121-75-5)
Mecarbam (2595-54-2)
Mepanipyrim (110235-47-7)
Metaconazole (125116-23-6)
Metalaxyl (57837-19-1)
Metamitron (41394-05-2)
Metazachlor (67129-08-2)
Methabenzthiazuron (18691-97-9)
Methacrifos (62610-77-9)
Methamidophos (10265-92-6)
Methidathion (950-37-8)
Methiocarb[1] (2032-65-7)
Methomyl (16752-77-5)
Methoxyfenozide (161050-58-4)
Metolachlor[5] (51218-45-2)
Metolcarb (1129-41-5)
Metoxuron (19937-59-8)
Metrafenone (220899-03-6)
Metribuzin (21087-64-9)
Mevinphos[5] (7786-34-7)

Monocrotophos (6923-22-4)
Monolinuron (1746-81-2)
Monuron (150-68-5)
Myclobutanil (88671-89-0)
Napropomide (15299-99-7)
Nitenpyram (150824-47-8)
Nitrofen (1836-75-5)
Nuarimol (63284-71-9)
Omethoate (1113-02-6)
Oxadixyl (77732-09-3)
Oxamyl (23135-22-0)
Oxychlordane (27304-13-8)
Oxydemeton-methyl (301-12-2)
Oxyfluorfen (42874-03-3)
Paclobutrazol (76738-62-0)
Parathion (56-38-2)
Parathion-methyl (298-00-0)
Penconazole (66246-88-6)
Pendimethalin (40487-42-1)
Permethrin[5] (52645-53-1)
Phenothrin (26002-80-2)
Phenthoate (2597-03-7)
Phosalone (2310-17-0)
Phosmet (732-11-6)
Phosphamidon (13171-21-6)
Picoxystrobin (117428-22-5)
Pirimicarb (23103-98-2)
Pirimiphos-ethyl (23505-41-1)
Pirimiphos-methyl (29232-93-7)
Prochloraz (67747-09-5)
Procymidone (32809-16-8)
Profenofos (41198-08-7)
Promecarb (2631-37-0)
Prometrym (7287-19-6)
Propamocarb (24579-73-5)
Propaquizafop (111479-05-1)
Propargite (2312-35-8)
Propazine (139-40-2)
Propetamphos (31218-83-4)
Propiconazole (60207-90-1)
Propoxur (114-26-1)
Propyzamide (23950-58-5)
Proquinazid (189278-12-4)
Pymetrozine (123312-89-0)
Pyraclostrobin (175013-18-0)
Pyrazophos (13457-18-6)
Pyrethrins (8003-34-7)
Pyridaben (96489-71-3)
Pyridaphenthion (119-12-0)
Pyrifenox (88283-41-4)
Pyrimethanil (53112-28-0)
Pyriproxifen (95737-68-1)
Pyrodalyl (179101-81-6)
Quinalphos (13593-03-8)
Quinoxyfen (124495-18-7)
Quintozene (82-68-8)
Simazine (122-34-9)
Spinosad (168316-95-8)
Spirodiclofen (148477-71-8)
Spiromesifen (283594-90-1)
Tebuconazole (107534-96-3)
Tebufenozide (112410-23-8)
Tebufenpyrad (119168-77-3)
Tebuthiuron (34014-18-1)
Tecnazene (117-18-0)
Teflubenzuron (83121-18-0)
Tefluthrin (79538-32-2)
Terbacil (5902-51-2)
Terbuthylazine (5915-41-3)
Terbutryn (886-50-0)
Tetrachlorvinphos (22248-79-9)
Tetraconazole (112281-77-3)
Tetradifon (116-29-0)
Tetramethrin (7696-12-0)
Thiabendazole (148-79-8)
Thiacloprid (111988-49-9)
Thiamethoxam (153719-23-4)
Thiodicarb (59669-26-0)
Tolclofos-methyl (57018-04-9)
Tolfenpyrad (129558-76-5)
Tolylfluanid (731-27-1)
Triadimefon (43121-43-3)
Triazophos (24017-47-8)
Triclopyr (55335-06-3)
Trietazine (1912-26-1)
Trifloxystrobin (141517-21-7)
Triflumizole (68694-11-1)
Trifluralin (1582-09-8)
Triticonazole (131983-72-7)
Vinclozolin (50471-44-8)
Zoxamide (156052-68-5)
2,4-D (94-75-7)

Note: Metabolites of the substances listed may also be included:

[1] Parent plus sum of sulfoxide and sulfone
[2] Parent plus sum of sulfone
[3] Sum of alpha and beta
[4] Sum of pp'-DDT, op'-DDT, pp'-DDE and pp'-TDE
[5] Sum of isomers

APPENDIX C - Potential pesticides residues (parent compounds only unless stated)
Sample 777 - Tea matrix

Acetamiprid (135410-20-7)	Cypermethrin[8] (52315-07-8)	Flusilazole (85509-19-9)	Phosmet (732-11-6)
Azinphos-methyl (86-50-0)	DDT[7] (50-29-3)	HCH-gamma (58-89-9)	Phoxim (14816-18-3)
Bifenthrin (82657-04-3)	Deltamethrin (52918-63-5)	Imidacloprid (138261-41-3)	Profenophos (41198-08-7)
Buprofezin (953030-84-7)	Dicofol (115-32-2)	Indoxacarb (173584-44-6)	Propyzamide (23950-58-5)
Cadusafos (95465-99-9)	Dieldrin (60-57-1)	Isoprocarb (2631-40-5)	Prothiophos (34643-46-4)
Carbaryl (63-25-2)	Difenoconazole (119446-68-3)	Isoxathion (18854-01-8)	Pyridaben (96489-71-3)
Carbendazim (10605-21-7)	Dimethoate (60-51-5)	Malathion (121-75-5)	Quinalphos (13593-03-8)
Chlorfenapyr (122453-73-0)	Endosulfan[6] (115-29-7)	Methomyl (16752-77-5)	Tebufenpyrad (119168-77-3)
Chlorfenvinphos (470-90-6)	Endrin (72-20-8)	Myclobutanil (88671-89-0)	Tefluthrin (79538-32-2)
Chlorobenzuron (57160-47-1)	Ethion (563-12-2)	Omethoate (1113-02-6)	Terbufos (13071-79-9)
Chlorpyrifos (2921-88-2)	Etrimfos (38260-54-7)	Oxamyl (23135-22-0)	Triadimefon (43121-43-3)
Chlorpyrifos methyl (5598-13-0)	Fenitrothion (122-14-5)	Pentachlorophenol (87-86-5)	Triadimenol (55219-65-3)
Clofentazine (74115-24-5)	Fenobucarb (3766-81-2)	Permethrin[8] (52645-53-1)	Triazophos (24017-47-8)
Cyhalothrin-lambda (91465-08-6)	Fenvalerate (51630-58-1)	Phosalone (2310-17-0)	Trichlorfon (52-68-6)

Note: Metabolites of the substances listed may also be included:

[6] Sum of alpha and beta
[7] Sum of pp'-DDT, op'-DDT, pp'-DDE and pp'-TDE
[8] Sum of isomers