



QFCS

Quality in Food Chemistry Scheme

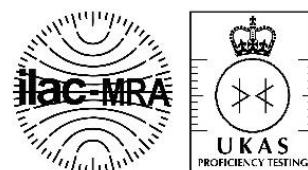
Scheme Description

LGC

Proficiency Testing

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

Telephone: +44 (0) 161 762 2500
Fax: +44 (0) 161 762 2501
Email: ptcustomerservices@lgcgroup.com
Website: www.lgcstandards.com



0001

Record of issue status and modifications

| ISSUE | ISSUE DATE | DETAILS | AUTHORISED BY |
|-------|------------|--|-------------------------|
| 11 | Sep 2013 | Sample details updated for 2014 including the addition of allergen testing (gluten) in flour. | W.Gaunt |
| 12 | Oct 2013 | Information (matrix details) updated for sample 774. | W.Gaunt |
| 13 | Sep 2014 | Sample details updated for 2015. Including the addition of trial materials. Inclusion of traceability information in Appendix A. Inclusion of subcontracting information in 'Test Materials' section. | W.Gaunt |
| 14 | Sep 2015 | Addition of samples 771 (Vitamins & minerals in cereal based food matrix) and 787 (Nitrate analysis of green leaf products) and general update of sample descriptions Removed Hard copy Report information. | W.Gaunt A.McCarthy |
| 15 | Oct 2015 | Addition of 788 (acrylamide in snacks) and 789 (metals in brown rice) | W.Gaunt S.Xystouris |
| 16 | Jan 2016 | Additional details for 779, addition of cholesterol to 772 | W.Gaunt |
| 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 |

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. However, participants may request result submission forms on which to report and return results if they are unable to report through electronic means. This will incur an additional charge.

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 760
Supplied as

Analysis of preservatives
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 761
Supplied as

Analysis of sweeteners
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 762
Supplied as

Analysis of food colours
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 763
Supplied as

Analysis of food colours
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 770
Supplied as

Nutritional analysis of processed cereal based food
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 School | All | Median | 20% of AV (min 1%) | % | 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 | Robust SD | % (as NaCl) | 2 |
| Sodium | Atomic absorption, Chloride Analyser, 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 771
Supplied as

Vitamins & minerals in cereal based food
100g cereal based food

| Analyte | Method | Range | AV | SDPA | Units | DP |
|--|--------|-------|--------|-----------|-----------------|----|
| Vitamin A | HPLC | All | Median | Robust SD | µg retinol/100g | 1 |
| Thiamine (<i>vitamin B1</i>) | HPLC | All | Median | 25% of AV | mg/100g | 2 |
| Riboflavin (<i>vitamin B2</i>) | HPLC | All | Median | 25% of AV | mg/100g | 2 |
| Niacin (<i>vitamin B3</i>) | HPLC | All | Median | Robust SD | mg/100g | 2 |
| Pantothenic Acid (<i>vitamin B5</i>) | HPLC | All | Median | Robust SD | mg/100g | 2 |
| Vitamin B6 | HPLC | All | Median | 25% of AV | mg/100g | 2 |
| Folic Acid (<i>vitamin B9</i>) | HPLC | All | Median | 20% of AV | µg/100g | 1 |

| Analyte | Method | Range | AV | SDPA | Units | DP |
|-------------|----------------------|-------|--------|-----------|-----------------------|----|
| 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 772
Supplied as**

Nutritional analysis of a 'pre-prepared' food product

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 |
| 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, Chloride Analyser, 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 773
Supplied as**

Pesticides analysis of fruit/vegetable

100g fruit/vegetable material containing up to 10 quantifiable pesticides (from Appendix B)
100g blank fruit/vegetable 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.

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 774
Supplied as**

Water activity analysis of food

50g cured meat, hard cheese, cereal or dried fruit – see the current QFCS Application form for full details.

| Analyte | Method | Range | AV | SDPA | Units | DP |
|----------------|----------------------|-------|--------|-------|----------------|----|
| Water activity | Water activity meter | All | Median | 0.010 | A _w | 3 |

**Sample 775
Supplied as**

Nutritional analysis of wheat flour

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 |
| 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 776
Supplied as

Nutritional analysis of bread
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, Chloride analyser, 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 (<i>vitamin B1</i>) | HPLC | All | Median | Robust SD | mg/100g | 2 |
| Riboflavin (<i>vitamin B2</i>) | HPLC | All | Median | Robust SD | mg/100g | 2 |
| Niacin (<i>vitamin B3</i>) | HPLC | All | Median | Robust SD | mg/100g | 2 |

Sample 777***
Supplied as

Pesticides analysis of dried tea
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.

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 778
Supplied as:

Edible Oil & Fat analysis
 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, GC-FID, GC-MS | - | 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 |
| 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 |

| Analyte | Method | Range | AV | SDPA | Units | DP |
|--|--------|-------|--------|---------------------------------|---------------------|----|
| 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 |
| 20:0 Eicosanoic 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 779
Supplied as**

**Aflatoxin analysis of nuts
50g nut & 50g blank nut matrix**

| Analyte | Method | Range | AV | SDPA | Units | DP |
|--|-------------|-------|--------|-----------|-------|----|
| Aflatoxins B ₁ , B ₂ , G ₁ , G ₂ | HPLC | All | Median | Robust SD | µg/kg | 1 |
| Total aflatoxins | HPLC, ELISA | 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 be taken into account when reporting the spiked sample values.

Sample 780*
Supplied as**

**Elements analysis in dried tea
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 781***
Supplied as

Gluten in flour (allergen testing)
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 |

Sample 782
Supplied as

Nutritional analysis of mixed fat spread
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 783
Supplied as

Nutritional analysis of tomato paste/puree
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 784***
Supplied as

Elements analysis in cereal grain
50g cereal grain

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

Sample 785***
Supplied as

Elements analysis in oil
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 786***
Supplied as

Elements analysis in dried fruit
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 |

Sample 787
Supplied as

Nitrate analysis in vegetables
50g of vegetable

| Analyte | Method | Range | AV | SDPA | Units | DP |
|---------|--------|--------------|--------|-----------|-------------------------------|----|
| Nitrate | HPLC | 2000 to 7000 | Median | Robust SD | mg/kg (as NaNO ₃) | 0 |

Sample 788*
Supplied as**

**Acrylamide analysis in snacks
50g snack product**

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

Sample 789*
Supplied as**

**Elements analysis in rice
10g rice**

| 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 |

¹Sum of As (III) and As (V)

**Sample 790
Supplied as:**

**Extra virgin olive oil analysis
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 |

| Analyte | Method | Range | AV | SDPA | Units | DP |
|---------------------------------------|--------------------------------------|-------|--------|------------|-------------------------------|----|
| 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 | | | | | | |
| 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 791
Supplied as:

Olive oil analysis
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 |

| Analyte | Method | Range | AV | SDPA | Units | DP |
|-------------------------------------|----------|----------------|--------|--------------|---------------------|----|
| 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 |
| 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 792
Supplied as

Perchlorates in vegetables
50g of vegetable

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

Sample 793
Supplied as

Nutritional analysis of cake
100g cake

| Analyte | Method | Range | AV | SDPA | Units | DP |
|---------------------|---|-------|--------|-----------|-----------------|----|
| Energy | All | 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 School, 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 |

| | | | | | | |
|----------|---|-----|--------|-----------|---------|---|
| Sodium | Atomic absorption, Chloride Analyser, 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 794***
Supplied as

Aflatoxin analysis of spices
100g chilli powder

| Analyte | Method | Range | AV | SDPA | Units | DP |
|--|-------------|-------|--------|-----------|-------|----|
| Aflatoxins B ₁ , B ₂ , G ₁ , G ₂ | HPLC | All | Median | Robust SD | µg/kg | 2 |
| Total aflatoxins | HPLC, ELISA | All | Median | Robust SD | µg/kg | 2 |

Sample 795***
Supplied as

Elements in mushrooms
5g 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 796***
Supplied as

Quality of frying oil
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 797***
Supplied as

Sulfur dioxide in dried fruit
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 |

Sample 798***
Supplied as

Nitrate in infant vegetable pureé
70g 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 799***
Supplied as

Egg white allergen in cake mix
20g cake mix powder

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

Sample 800***
Supplied as

Cheese authenticity and quality
100g grated cheese or non-dairy alternative

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

Sample 801***
Supplied as

Honey essential composition and quality factors
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 802***
Supplied as

Ground coffee quality parameters
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 |
| 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 803***
Supplied as

Sudan IV in palm oil
50g palm oil

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

Sample 804***
Supplied as

Mycotoxins in dried fruits
200g raisins 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 |

Sample 805***
Supplied as

Polycyclic Aromatic Hydrocarbons (4 EU markers) in vegetable oil
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, Calculation | All | Median | Robust SD | µg/kg | 2 |

Sample 806***
Supplied as

Essential composition and fatty acids breakdown of fish oil supplement
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 |

| Analyte | Method | Range | AV | SDPA | Units | DP |
|---------------------------|-------------|-------|--------|-----------|---------------|----|
| 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 807***
Supplied as

Glyphosate and AMPA in grain flour
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 |

Sample 808***
Supplied as

Almond in rice flour (allergen testing)
20g contaminated rice flour

| Analyte | Method | Range | AV | SDPA | Units | DP |
|---------|--------|-------|--------|-----------|-------|----|
| Almond | ELISA | All | Median | Robust SD | mg/kg | 2 |

Sample 809***
Supplied as

Soy in rice flour (allergen testing)
20g contaminated rice flour

| Analyte | Method | Range | AV | SDPA | Units | DP |
|---------|--------|-------|--------|-----------|-------|----|
| Soy | ELISA | All | Median | Robust SD | mg/kg | 2 |

Sample 810***
Supplied as

β-lactoglobulin in infant formula powder (allergen testing)
20g contaminated infant formula powder

| Analyte | Method | Range | AV | SDPA | Units | DP |
|-----------------|--------|-------|--------|-----------|-------|----|
| β-lactoglobulin | ELISA | All | Median | Robust SD | µg/kg | 2 |

Sample 811***
Supplied as

Nutritional analysis of ketchup
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 |

| Analyte | Method | Range | AV | SDPA | Units | DP |
|---------------------|---|-------|--------|-----------|----------------------------|----|
| 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 |

Sample 812***
Supplied as

Nutritional analysis of mayonnaise
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, Chloride analyser, 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 813*
Supplied as**

**Nutritional analysis of mustard
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 |
| 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 |

Sample 814*
Supplied as**

**Nutritional analysis of canned fruit
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 815***
Supplied as

Chemical parameters in spices
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 |

Sample 816***
Supplied as

Nutritional analysis of dried pasta
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 |
| Total sugars | HPLC, Luff Schoolr, 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 | % | 2 |

| | | | | | | |
|---------------------|---|-----|--------|-----------|---|---|
| Moisture | Drying at 100-105°C Drying at 130°C Drying at 87°C | All | Median | Robust SD | % | 2 |
| Total dietary fibre | AOAC 991.43 AOAC 985.29 AOAC 992.16 Fibre analyser (e.g. Fibretec) | All | Median | Robust SD | % | 2 |

Sample 817*
Supplied as**

Composition and quality in jam and marmalade
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 818*
Supplied as**

Foreign bodies in food products
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 819***
Supplied as

Chemical analysis of table salt
300g table salt

| Analyte | Method | Range | AV | SDPA | Units | DP |
|---------------|--------|-------|--------|-----------|------------------------|----|
| Purity | All | All | Median | Robust SD | % as NaCl on dry basis | 1 |
| Moisture | All | All | Median | Robust SD | % | 2 |
| Sulfate | All | All | Median | Robust SD | mg/kg | 2 |
| Iodine | All | All | Median | Robust SD | mg Iodine/kg | 2 |
| Calcium | All | All | Median | Robust SD | mg/kg | 0 |
| Magnesium | All | All | Median | Robust SD | mg/kg | 0 |
| Total Arsenic | All | All | Median | Robust SD | mg/kg | 3 |
| Lead | All | All | Median | Robust SD | mg/kg | 3 |
| Cadmium | All | All | Median | Robust SD | mg/kg | 3 |
| Mercury | All | All | Median | Robust SD | mg/kg | 3 |
| Copper | All | All | Median | Robust SD | mg/kg | 2 |

Sample 820***
Supplied as

Lactose (low levels) in food products
100g food product

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

Sample 821***
Supplied as

Nutritional analysis of dehydrated food products
150g of dehydrated food product (e.g. instant noodles)

| Analyte | Method | Range | AV | SDPA | Units | DP |
|-------------------------|--------|-------|--------|-----------|-----------------|----|
| Energy | All | All | Median | Robust SD | kcal or kJ/100g | 0 |
| Fat | All | All | Median | Robust SD | % (g/100g) | 2 |
| Saturates | All | All | Median | Robust SD | % (g/100g) | 2 |
| Total trans fatty acids | All | All | Median | Robust SD | % (g/100g) | 3 |
| Carbohydrate | All | All | Median | Robust SD | % (g/100g) | 2 |
| Total sugars | All | All | Median | Robust SD | % (g/100g) | 2 |
| Protein | All | All | Median | Robust SD | % (g/100g) | 2 |
| Salt | All | All | Median | Robust SD | % (as NaCl) | 2 |
| Sodium | All | All | Median | Robust SD | % | 2 |
| Cholesterol | All | All | Median | Robust SD | mg/100g | 2 |

Sample 822***
Supplied as

Vinegar quality analysis
100ml of vinegar

| Analyte | Method | Range | AV | SDPA | Units | DP |
|-------------------|-------------|-------|--------|-----------|---------------|----|
| Total acidity | All | All | Median | Robust SD | % acetic acid | 2 |
| Total ash | All | All | Median | Robust SD | % | 2 |
| Density | All | All | Median | Robust SD | g/ml | 5 |
| Total dry extract | All | All | Median | Robust SD | % | 2 |
| Volatile acidity | Calculation | All | Median | Robust SD | % acetic acid | 2 |
| pH | All | All | Median | Robust SD | - | 2 |

Sample 823***
Supplied as

Amino acid profile in infant formula powder
50g of infant formula powder

| Analyte | Method | Range | AV | SDPA | Units | DP |
|----------------------------|--|-------|--------|-----------|--------|----|
| Alanine (free) | HPLC (post column), HPLC (pre-column), IEC | All | Median | Robust SD | g/100g | 3 |
| Arginine (free) | | 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) | | 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 |

Sample 824***
Supplied as

Instant coffee quality parameters
200g instant coffee

| Analyte | Method | Range | AV | SDPA | Units | DP |
|------------------------------------|--------|-------|--------|-----------|---------|----|
| Moisture | All | All | Median | Robust SD | % | 2 |
| Solubility in cold water at 16±2C° | All | All | Median | Robust SD | g/100ml | 2 |
| Fat | All | All | Median | Robust SD | g/100g | 2 |

| | | | | | | |
|-------------------------|-----|-----|--------|-----------|------------|---|
| Carbohydrate | All | All | Median | Robust SD | % (g/100g) | 2 |
| Total glucose | All | All | Median | Robust SD | % (g/100g) | 2 |
| Protein | All | All | Median | Robust SD | % (g/100g) | 2 |
| Total dietary fibre | All | All | Median | Robust SD | % (g/100g) | 2 |
| Ash | All | All | Median | Robust SD | % (g/100g) | 2 |
| pH | All | All | Median | Robust SD | - | 2 |
| Total chlorogenic acids | All | All | Median | Robust SD | mg/g | 2 |
| Caffeine | All | All | Median | Robust SD | mg/g | 2 |

Sample 825***
Supplied as

Authenticity of herbs and spices
15g dried oregano or ground pepper

| Analyte | Method | Range | AV | SDPA | Units | DP |
|------------------------------|---------------------------------|-------|----|------|-------|----|
| Confirmation of authenticity | Microscopy, MS, NGS, FTIR, SCIO | N/A | - | - | - | - |

Sample 826***
Supplied as

Capsaicin and heat units in chilli powder
20g dried chilli powder

| Analyte | Method | Range | AV | SDPA | Units | DP |
|-----------|-------------|-------|--------|-----------|---------------|----|
| Capsaicin | HPLC | All | Median | Robust SD | mg/kg | 2 |
| Heat unit | Calculation | All | Median | Robust SD | Scoville unit | 0 |

Sample 827***
Supplied as

Elements in infant fruit/vegetable pureé
10g infant fruit/vegetable pureé

| 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 |

¹Sum of As (III) and As (V)

Sample 828***
Supplied as

Nutritional analysis of processed nuts
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, Chloride analyser, Flame photometry, Ion chromatography, Titration | All | Median | Robust SD | % | 2 |

Sample 829***
Supplied as

Tea quality parameters
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 830***
Supplied as

Vitamin C in fruit/vegetable pureé
20g fruit/vegetable pureé

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

Sample 831***
Supplied as

Opiates in poppy seeds
2g 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 832
Supplied as

Nutritional analysis of non-wheat flour
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 | % | 2 |
| Protein | Dumas Kjeldahl NIR (food analyser) | All | Median | 0.30 | % | 2 |
| Total dietary fibre | All | All | Median | - | % | 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 |
| Calcium | AAS, Colorimetry, Flame photometry, ICP-MS, ICP- OES, Ion chromatography, Titration | All | Median | 15% of AV | mg/100g | 2 |

Sample 833*
Supplied as**

**Nutritional analysis of baby food pureé
150g of food pureé**

| 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, Chloride analyser, Flame photometry, Ion chromatography, Titration | All | Median | Robust SD | % | 2 |

***Test materials currently not included in LGC's UKAS Scope of Accreditation

**APPENDIX B - Potential pesticides residues (parent compounds only unless stated)
Sample 773 - Fruit/vegetable matrix**

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

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