



APLAC Proficiency Testing Programme

Nutrients in Food

1. Coordinators

2. Centre for Food Safety (CFS)
3. Hong Kong Accreditation Service (HKAS)

4. Nature and Objective of the Programme

Providing nutrition information on food labels is an important public health tool to promote a balanced diet as food label is an important communication channel whereby consumers can obtain specific information on individual food products.

Considering the needs of laboratories for seeking accreditation on testing nutrients in food, a PT programme on nutrients in food is proposed. The programme will be organised by the CFS with HKAS as the collaborator under the auspices of APLAC. The main objectives of this proposal are to provide an analytical forum for participants in the quantitative analysis of nutrients in food sample and to evaluate the measurement capability of participating laboratories that providing such testing services.

5. Responsibilities

- 3.1. The CFS is responsible for preparing and packaging samples, performing homogeneity and stability tests, collecting test results from participating laboratories, conducting statistical analysis of data, handling participants' queries and issuing interim and final reports. Contact information of CFS:

Dr. Stephen W. C. Chung
4/F, Public Health Laboratory Centre,
382 Nam Cheong Street, Shek Kip Mei, Hong Kong
Fax: +852 2776 4335
Tel.: +852 2319 8439
Email: swcchung@fehd.gov.hk

- 3.2. HKAS is responsible for inviting participants, dispatching samples and acting as a contact point between participants and the CFS. Contact information of HKAS:

Mr. W. W. Wong
36/F, Immigration Tower,
7 Gloucester Road, Wanchai, Hong Kong
Fax: +852 2824 1302
Tel.: +852 2829 4813
Email: wwwong@itc.gov.hk

6. Selection of Participants

APLAC members as well as other non-APLAC members will be invited to participate in the programme. Invitations will be sent to all APLAC members and other

accreditation bodies as soon as this proposal is approved by the APLAC PT Committee. Participating accreditation bodies will be asked to nominate laboratories to participate and indicate the accreditation status of the nominated laboratories for the test. The number of laboratories is **limited to 50**. Therefore, a restriction on the number of participating laboratories from each accreditation body may need to be imposed.

7. **Preparation of Sample**

About 10 kg of biscuit were purchased from local market and were confirmed to contain protein, fat, dietary fibre, sodium and sugars. The sample was homogenized. The fine powder, in about 120 g portion each, was independently transferred to clean plastic bags. The prepared samples (about 66 bags) were vacuum packed for preventing microbial growth.

Participating laboratories will be provided with a pack containing about 120 g of sample and are required to determine the mass fraction (in g/100 g) of moisture, ash, protein, fat, saturated fat, trans fat, total dietary fibre, sodium and sugars in the sample as received. Except for the analysis of dietary fibre, participating laboratories should choose and use the most appropriate test methods (accredited, validated, in-house, etc) which generate results that are complying with the Codex Alimentarius definitions of the respective nutrients for the food (biscuit) concerned. For protein, a protein factor of 6.25 should be used. Test results and other technical details should be reported in the result sheets provided. AOAC Official method should be used for the analysis of dietary fibre.

8. **Homogeneity and Stability Testing**

Ten samples were taken randomly from the prepared bag and analysed in duplicate for determining sample inhomogeneity in accordance with the recommendation stipulated in APLAC PT002 Testing Interlaboratory Comparisons. Regularly, a random sample will be taken and analysed in duplicate for monitoring the stability of the level of analytes until the results from all participant laboratories are received.

9. **Statistical Analysis**

Performance of participating laboratories is assessed using z-score which is calculated as:

$$z_i = \frac{x_i - \bar{x}}{s}$$

where x_i = reported result
 \bar{x} = consensus mean
s = standard deviation

Consensus mean \bar{x} and standard deviation are determined using pooled data from each participating laboratories by robust statistic. Performance of participating laboratories is interpreted as follows:

(a) $|z| \leq 2$ Satisfactory

- (b) $2 < |z| < 3$ Questionable
(c) $|z| \geq 3$ Unsatisfactory

Laboratories having a $|z|$ score larger than 3 shall thoroughly investigate their results for the discrepancy and those having a z-score in the range $2 < |z| < 3$ are also encouraged to review their results.

10. Issuance of Reports

Upon completion of data analysis, the CFS will issue an interim report to participating laboratories and/or accreditation bodies via HKAS for comment. After that, a draft final report will be prepared and be submitted to APLAC PT Committee for approval. With the official endorsement from APLAC PT Committee, a copy of the Final Report will be distributed to the participating laboratories.

11. Proposed Time Schedule

Event	Period	Responsible
Preparation of sample	Jun 2009	CFS
Homogeneity testing	Jul – Sep 2009	CFS
Submission of proposal to APLAC PT Committee for approval	Aug 2009	HKAS
Stability testing	Jul – Sep 2009	CFS
Invitation of participants	Sep 2009	HKAS
Dispatch of samples	Sep 2009	HKAS
Submission of results	Nov 2009	HKAS
Statistical analysis of results	Nov – Dec 2009	CFS / HKAS
Interim report	Dec 2009	CFS / HKAS
Submission of draft final report to APLAC PT Committee	Feb 2010	CFS / HKAS
Approval of draft final report by APLAC Proficiency Committee	Feb 2010	CFS / HKAS
Distribution of final report	Mar 2010	CFS / HKAS

10. Confidentiality

Each laboratory will be assigned with a unique identification code. This unique code will be used in the report. If the laboratories submit their results through their accreditation bodies, their results may be disclosed to and released through their accreditation bodies. Information on the identities, results and performance of the

laboratories will be kept confidential to the accreditation bodies, the participating cooperations of accreditation bodies and the organisers (CFS, HKAS and APLAC).



INSTRUCTIONS TO PARTICIPATING LABORATORIES

To ensure that results from this programme can be analysed properly, participating laboratories are asked to strictly adhere to the following instructions.

1. Participating laboratories are supplied with a bag of powered biscuit sample, which is labelled as “Test Sample”.
2. Upon receipt of the samples, participating laboratories should carefully inspect the samples for any physical damages and defects. If presence of abnormality is detected, please contact the organisers at calvinho@itc.gov.hk immediately. New sample(s) will be replaced if necessary.
3. If the conditions of the samples are satisfactory, participating laboratories shall promptly acknowledge the receipt of the samples by returning the “Receipt Form” electronically to the organisers at calvinho@itc.gov.hk.
4. Analysis may commence as soon as the sample is received. The sample should be stored in the original packaging at room temperature until analysis commences.
5. The following analyses are to be performed. Analysis results, in g/100g on as-received basis, and other information should be reported on the given “Results Proforma”.
 - i. Protein [multiply percent nitrogen by factor 6.25 to calculate percent protein]
 - ii. Total lipids [total amount of fats (free and bound) and fat soluble substances]
 - iii. Saturated fat [sum of saturated fatty acids, e.g. C_{4:0}, C_{6:0}, C_{8:0}, C_{10:0}, C_{12:0}, C_{14:0}, C_{15:0}, C_{17:0}, C_{18:0}, C_{20:0}, C_{24:0}, etc.]
 - iv. Trans fatty acids [sum of all the geometrical isomers of monounsaturated and polyunsaturated fatty acids having non-conjugated, interrupted by at least one methylene group, carbon-carbon double bonds in the trans configuration, e.g. C_{14:1T(9-trans)}, C_{16:1T(9-trans)}, C_{18:1T(total)}, C_{18:2TT(9, 12-trans)}, C_{18,2T(9-cis, 12-trans)}, C_{18:2T(9-trans, 12-cis)}, C_{20:1T(11-trans)}, C_{22:1T(13-trans)}, etc.]
 - v. Sugars [sum of monosaccharides and disaccharides present]
 - vi. Sodium
 - vii. Moisture
 - viii. Ash
 - ix. Total dietary fibre

Participating laboratories should be aware of analyte stability and perform the analyses in an appropriate order.



HONG KONG ACCREDITATION SERVICE (HKAS)
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“NUTRIENTS IN FOOD”
PROFICIENCY TESTING PROGRAMME (APLAC T073)



6. Except the analysis of total dietary fibre, participating laboratories should use the most appropriate analytical methods which would normally be used to analyse customer samples. For “sugars” and “trans fatty acids”, the analysis results should be conforming to the respective definitions given by Codex Alimentarius (CAC/GL 2-1985). AOAC Official Method should be used for the analysis of total dietary fibre.
7. Estimate and report the expanded measurement uncertainty with coverage factor (k) for each result.
8. Send the completed results sheet to the organisers on or before 14 November 2009 at chtran@fehd.gov.hk using the electronic copy of the “Results Proforma” provided.

(Notes: 1. Under normal circumstances, results submitted after the deadline will not be accepted. 2. Owing to possible poor transmission quality, results submitted by fax are generally not acceptable.)

9. For enquires, please contact the organisers at swcchung@fehd.gov.hk .



HONG KONG ACCREDITATION SERVICE (HKAS)
CENTER FOR FOOD SAFETY (CFS)
PROFICIENCY TESTING PROGRAMME ON
NUTRIENTS IN FOOD (APLAC T073)



**INSTRUCTIONS
TO ACCREDITATION BODIES**

1. ORGANISERS

The PT program on “Nutrients in Food (APLAC T073)” is organised by the Centre for Food Safety (CFS) in collaboration with Hong Kong Accreditation Service (HKAS) under the auspices of the Asia-Pacific Laboratory Accreditation Cooperation (APLAC). The main objectives of this proposal are to provide an analytical forum for participants in the quantitative analysis of nutrients in food sample and to evaluate the measurement capability of participating laboratories that providing such testing services.

2. SAMPLE

Accreditation bodies (ABs) should receive the PT samples and instruction information (hard copy and soft copy) from the organisers. The PT sample consists of **ONE** plastic bag containing about 120 g of fine biscuit powder. Upon receipt, ABs should carefully check the samples (number of plastic bags, physical conditions, etc.) and shall promptly acknowledge the organisers by returning the “Receipt Form (for Accreditation Bodies)” electronically to calvinho@itc.gov.hk . New sample(s) will be replaced for any missing and damaged bags.

ABs shall distribute the samples to their nominated laboratories as soon as possible. The samples are recommended to be stored in a secure environment at room temperature (around 25°C) if immediate dispatch is not possible.

ABs shall ask their nominated laboratories to check the samples carefully upon receipt and promptly acknowledge the organisers by returning the “Receipt Form (for Participating Laboratories)” electronically to calvinho@itc.gov.hk .

3. RESULTS

ABs shall remind their nominated laboratories to complete the “Results Proforma” and submit electronically to the organisers CFS on or before 14 Nov 2009 at chtran@fehd.gov.hk . (Notes: 1. Under normal circumstances, results submitted after the deadline will not be accepted. 2. Owing to possible poor transmission quality, results by fax are generally not acceptable.)

4. ENQUIRIES

Please contact the organisers for further technical enquiries at chtran@fehd.gov.hk



To: Mr Calvin HO, Hong Kong Accreditation Service (HKAS)
 Fax: +852 2824-1302
 E-mail: calvinho@itc.gov.hk



APLAC T073
 “Nutrients in Food” Proficiency Testing Programme
 Nomination Form for Accreditation Bodies

Please complete the details of your nominated laboratories below and **email** to the contact above **no later than 29 September 2009.**

Accreditation Body Information

Name: _____

Contact Person: _____

Shipping Address: _____

Country/Economy: _____

Phone: _____ Fax: _____

E-mail: _____

Laboratory Name: _____

Contact Person: _____

Physical Address: _____

Country/Economy: _____

Phone: _____ Fax: _____

E-mail: _____

Accredited for test: Yes / No*

Laboratory Name: _____

Contact Person: _____

Physical Address: _____

Country/Economy: _____

Phone: _____ Fax: _____

E-mail: _____

Accredited for test: Yes / No*

*Please circle as appropriate