Nordic Committee on Food Analysis

NMKL Newsletter

No. 82

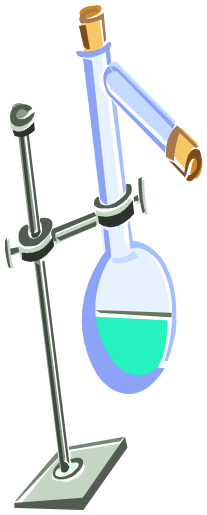
December 2012

Contents:

New NMKL Procedure, available in Swedish and English:

Recovery information in analytical measurements

NMKL Procedure No. 25, 2012



Since 2006, a Nordic working group has been working on the elaboration of a guide on recovery. This turned out to be more complicated that the project group assumed. But finally, the procedure is ready. The following experts have been involved in the project:

Arne Højgård Jensen, Denmark (Project leader)
Tone Normann Asp, Norway
Håkan Johnsson, Sweden
Lars Jorhem, Sweden
Eija-Riitta Venäläinen, Finland
Ásta M. Ásmundsdóttir, Iceland

The use of recovery information is related to the adjustment of experimental values with the dual purpose of either compensating for analyte loss and matrix effects in the analyte measurement, or checking an analytical method in order to estimate the complete systematic deviation of the process.

Three concepts are used in this context:

- Recovery
- Apparent recovery
- Calibration recovery

Recovery is defined as the measurement of the yield of an analytical process in relation to extraction or pre-concentration, while the Apparent Recovery is the observed concentration following the analytical process, estimated from a calibration curve. Calibration Recovery is the relation between matrix and concentration.

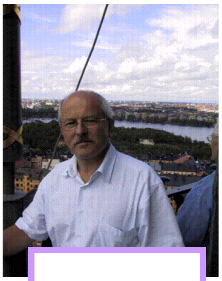
The purpose of this guideline is to give answers to the following questions:

- What is recovery, absolute recovery, relative recovery, apparent recovery, and calibration recovery?
- How should a recovery study be set up?
- How is recovery estimated?
- Is recovery the same as bias?
- How should recovery be included in method validation and measurement uncertainty?
- When should recovery be stated?

In November this year, Lars Jorhem, Sweden, held courses in the procedure in Denmark, Finland, Iceland and Norway. The feedback has been very positive. *Did you miss the course? It is not too late! It is still possible to attend the course 13 February 2013 at the National Food Administration, Sweden. Please visit www.nmkl.org for further information.*

NMKL Procedure No. 25 will be distributed to the NMKL subscribers without cost, as the number of published methods have been lower than normal this year.

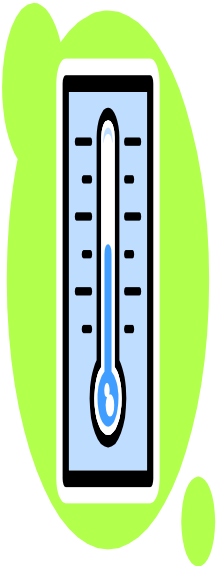
Don't miss the course in recovery, 13 February 2013, at the National Food Administration, Sweden, see ww.nmkl.org



Lars Jorhem

New NMKL Procedure No. 26, 2012

Control and internal calibration of thermometers, and temperature control in microbiological laboratories



This NMKL procedure for control and internal calibration of thermometers and temperature control in microbiological laboratories, is based on national and international recommendations, as well as experience within the field of control and calibration of thermometers at Nordic food laboratories. This procedure also aims to serve as a practical guide for daily temperature controle in a microbiological laboratory.

The procedure

- is intended for food laboratories of all sizes,
- is a general procedure, which can be adapted to the needs of the individual laboratory,
- clarifies the terminology around the control and calibration of thermometers,
- gives practical instructions on how to carry out and document control and internal, traceable calibration, and
- provides practical guidance for temperature control in a microbiological laboratory.

The procedure replaces NMKL Procedure No. 2, 1995: “Performance check and in-house calibration of thermometers”, and NMKL Procedure No. 15. "Temperature control in microbiological laboratories."

For the time being, the procedure is only available in Scandinavian languages, but it will be translated into English.

The following people have participated in the project:

- Majbritt Karlskov Moos, Denmark
- Margrét Geirsdóttir, Iceland
- Crina Raura, Norway
- Håkan Johnsson, Sweden (Project leader)

Håkan Johnsson

Summary of the Procedure:

1) The laboratory must have reference thermometers covering the temperature range to be measured. These must be traceably calibrated to a national or international measurement standard by a company that is accredited for the calibration of temperature. Reference thermometers shall be calibrated according to a pre-arranged calibration plan.

2) The working thermometers of the laboratory should be traceably calibrated as described in paragraph 1 or, provided the laboratory has the necessary competence mentioned in paragraph 5 below, be calibrated internally. Working thermometers shall be calibrated according to a pre-arranged calibration plan.

3) Inbetween the regular calibrations, the electronic working thermometers shall be checked at least every six months.

4) The laboratory must have written procedures for how and how often the thermometers should be checked. The controls shall be documented. Acceptance limits must be set and deviations should lead to concrete measures, which should be documented.

5) Provided the laboratory has the necessary competence, working thermometers can be calibrated internally in the laboratory against the laboratory’s reference thermometers. The calibration is to be performed according to written procedures and should be documented. Acceptance limits must be set and deviations should lead to concrete measures, which should be documented.

6) Practical guidelines for temperature measurement in microbiological work.

The 66th NMKL Annual Meeting

The 66th NMKL Meeting was held 25 - 28 August 2012 at Haikko Manor, in Porvoo, Finland. The participants were members of the national committees, appointed experts, from Denmark / Faroe Islands, Finland, Iceland, Norway and Sweden. The Finnish National Committee with the Chair Harriet Wallin, Evira, was the local organiser.

The Chair of NMKL, Ulla Edberg, National Food Administration, Sweden, opened the Annual Meeting by stating how pleased she was to sum up what we've accomplished during the year. “The results of the activities are the results of what we all have contributed to”, she said and continued: I know that most people have a very tight work situation that requires hard priorities for getting any NMKL work done.

It is gratifying to know that the Food department at the Council of Ministers' Committee of Senior Officials, EK-FJLS, who accounts for our vital core funding, expresses its confidence in, and support for, the work we do. What we do is an important part of efforts to strengthen the Nordic region's international position and to support and facilitate our Nordic laboratories.

NMKL is an old and venerable Nordic organisation that began its work back in 1947. Over the years, the business has evolved and the focus adjusted to the changes in our countries, so NMKL is today a modern and contemporary organisation.

All of you sitting here today represent the best laboratories in your respective countries. Our success depends on your skills and the opportunity to participate in the work.

All the five Nordic countries participate in the work of NMKL to improve and develop support for laboratories worldwide working within food analyses.

NMKL works according to both long term and annual action plans.

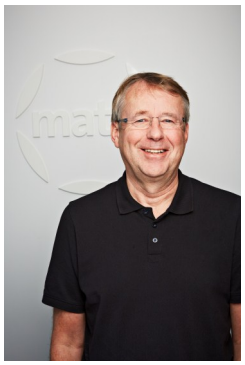
Briefly summarised the NMKL has the following tasks:

- Being a Nordic expert network for food analysis.
- Offering validated and quality reviewed methods for food and feed analysis.
- Through NordVal evaluating and certifying alternative methods for food and feed analysis.
- Developing procedures and guidelines in support of quality assurance work in the food and feed laboratories.
- Arranging courses and seminars in relevant areas.

Ulla Edberg

From Plennary

Most of the work at NMKL Annual Meetings take place in the committees of microbiology, chemistry and sensory analyses, respectively, where all the projects on the NMKL's working program are discussed.



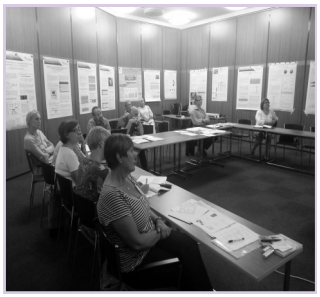
Franklin Georgsson, Matis, Iceland, Chair of the microbiological committee

Harriet Wallin, Evira, Finland, Chair of the chemical committee

Gunnar Forsgren, Iggesund Bruk, Sweden, Chair of the sensory committee

Microbiological Committee

Chemistry Committee



Sensory Committee

The working program of NMKL

Microbiology:

- *Clostridium botulinum* in foods and other samples
- Pathogenic *Yersinia enterocolitica,* culture method and PCR method for detection in foods
- *Shigella,* culture method and PCR method for detection in foods
- *Clostridium difficilie,* detection in foods
- Aerobic microorganisms, enumeration in foods
- *Salmonella,* using MSRV for detection in foods, faeces and other animal material
- *Giardia* and *Cryptosporidium,* detection in drinking water
- Anaerobic sulphite-reducing bacteria, determination in foods
- Quality control of PCR analysis
- Verification of microbiological methods

Chemistry:

- Methyl mercury, determination with isotope dilution GC-ICPMS
- Histamine, HPLC determination in fish
- Sterols and stanols, GC determination in phytosterol fortified foods
- Nitrate and nitrite, spectrophotometric determination after reduction with zinc and Griess' reaction
- Fat, determination using NMR in foods
- Forbidden colouring agents in mixed spices
- Folate in milk and milk products
- PSP toxins, HPLC determination in shellfish
- Pesticide residues with ethyl acetate (SweEt)
- Moisture in bread
- Calibration of NIR and IR
- Control chart and control materials in internal quality control

Sensory:

- Quality control of drinking water (toxicological evaluation)
- Guidelines for reporting sensory data
- Measurement uncertainty in sensory analysis
- Sensory analysis of meat and meat products
- Guidelines for sensory evaluation of bread
- Methods for discriminate tests (binomial tests)
- Recruitment / training and control of analytical panels. Training of assessors

Common topics:

- Performance check and in-house calibration of thermometers
- Sampling of foods
- Laboratory emergency procedures

Thanks to Harriet Wallin and the Finnish Food Safety Authority Evira, Finland

The chair of the Finnish National Committee and the chair of the Chemical Committee, Harriet Wallin was for many years (1985 - 1997) the Secretary General of NMKL.

During her time as Secretary General, quality assurance and international cooperation became increasingly important. NMKL methods were validated in method performance studies, and the results were included in the method description. The methods were also made available in Finnish. It is crucial to have methods available in your own language. The first NMKL procedures on quality assurance were published in this period.

"Work Nordic, and share the results globally." was one of Harriet Wallin's visions for NMKL .

With its limited resources, NMKL has always realised the importance of keeping up with what is happening internationally, to avoid duplication of effort. NMKL results are presented internationally and other organisations are given the opportunity to adopt NMKL material. In some cases NMKL has also adopted methods elaborated by other organisations.

The collaboration with AOAC International started in the 1970s, and developed over the years. Furthermore, Harriet Wallin managed, in an outstanding manner, to render visible the work of NMKL at committees of Codex Alimentarius. Since 1993, NMKL has participated in the European standardisation organisation, CEN Technical Committee 275, which works with methods for foodstuffs.

Harriet Wallin has played an invaluable role in NMKL and the Nordic cooperation. We offer our warmest thanks to Harriet Wallin for her efforts and dedication to NMKL, to the Nordic cooperation and the sharing of knowledge and expertise internationally.

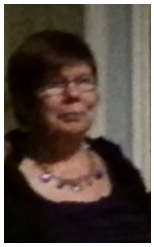
We wish Harriet Wallin the very best in the new life as a retiree.

"Work Nordic, and share the results globally"

Harriet Wallin

Photo: Ulf Bondesson

NMKL members in new positions



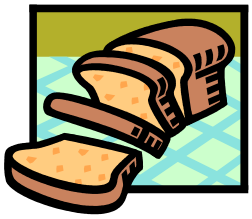
Researcher **Tuula Pirhonen Evira**, Finland, has been appointed by Evira as the new chair of the Finnish National Committee.
Tuula Pirhonen is a microbiologist and has been involved in NMKL for many years. Tuula Pirhonen also participates in other international organisations, like IDF (International Dairy Federation) and ISO (International Organization for Standardization).

Researcher **Liv Kukkoen**, Evira, has been appointed as chair of the Chemical Committee (sub 3), taking over for Harriet Wallin, for the period 28.9.2012–3.9.2013. Liv Kukkonen is also the secretary of the Finnish National Committee. She is a chemist and is relatively new within NMKL.

Researcher **Grethe Hyldig**, DTU, National Food Institute, Denmark, has been appointed by NMKL as the chairperson of the Sensory Committee (sub 4), taking over for Gunnar Forsgren. Grethe Hyldig has been in NMKL for many years, and is active in national and international sensory forums.

NMKL Method No. 14, 2. Ed., 2012:

Moisture in bread. Gravimetric determination



NMKL Method No. 14 is originally from 1953. The changes in this method is editorial only, as the original text had become practically unreadable.

The method is applicable to all common sorts of bread except pastry with a high fat content.

The principle of the method is that bread is weighed, cut up in slices which are air-dried and then weighed again. The air-dried material is grounded, sieved and mixed. The moisture detention is determined in an aliquot portion by drying at 130°C.

User Survey on NMKL Publications

NMKL will conduct a survey of the use of NMKL methods, in order to find out which methods are used, and how often.

Furthermore, we would like to learn which NMKL Procedures you find useful.

The survey will be electronically, and forwarded NMKL subscribers in January 2013. NMKL will very much appreciate it if you take the time to complete the survey - we aim to make it simple.

Please remember to notify NMKL about any changes in addresses

Price list 2013 - NMKL Publications

- NMKL subscription (online, paper and pdf) for 1-3 users: NOK 2500 per year
- New subscription (first time) of online method collection: NOK 5.000
- NMKL Methods (single): NOK 500
- NMKL Procedures: Procedures that are 30 pages or less: NOK 400
  Procedures which consist of more than 30 pages: NOK 600

New Offer! Electronic access to NMKL Procedures + NMKL Methods:

- Online access to all NMKL Procedures for 1-3 users: First time NOK 4000, then NOK 1500 per year.
- Online access to both NMKL Procedures and NMKL Methods : NOK 3500 per year
- Online access to both NMKL Procedures and NMKL Methods (first time): NOK 8000

Please notify us, preferably by e-mail to nmkl@vetinst.no, if you would like a new subscription or you want to change an existing subscription.
If you are already a subscriber, please state your AB number in the correspondence.

HyServe Compact Dry TC for the Enumeration of Total Viable Organisms in Foods
NordVal Certificate No. 033

Field of application

HyServe Compact Dry TC is a ready-to-use, dry, chromogenic plate for the enumeration of total viable organisms count.

Principle

An aliquot of 1 mL of an appropriate dilution is plated onto a Compact Dry TC plate. The plate is incubation at 30 ± 1°C for 48 ± 3 h and 72 ± 3 h, respectively.

Reference method

ISO 4833: 2003: "Microbiology of foods and animal feeding stuffs. Horizontal method for the enumeration of microorganisms. Colony count techniques at 30°C."

Validation procedure

The method validation was carried out by Campden, UK, in 2007. Food categories included in the study were cooked chicken, frozen fish, lettuce, milk powder, and raw meat. Five levels of contamination were used for each food category. For all foods, except the milk powder, naturally contaminated samples were tested. Five replicates were analysed at each level of each category with both the alternative and the reference method.

Evaluation of the results

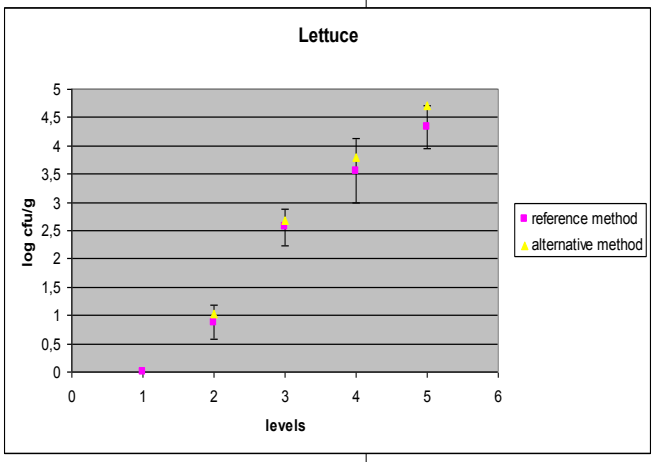
The mean and the standard deviation of the results obtained by both HyServe Compact Dry TC and the ISO 4833, were calculated. The obtained mean values were plotted in a graph, as shown to the right. In addition to the mean, the confidence levels (± 2 times the standard deviations) of the results obtained by the reference method were also plotted. Thus, it is easy to illustrate whether the alternative method gives equivalent results as the reference method.

In the comparison study, the lowest validated levels with satisfactory results were:

chicken:	2.6 log cfu/g
frozen fish:	3.0 log cfu/g
lettuce:	3.4 log cfu/g
milk powder:	2.1 log cfu/g
raw meat:	3.4 log cfu/g

HyServe Compact Dry TC provides equivalent results as the reference method for the enumeration of total viable organisms in foods.

When the results obtained by the alternative method fall within the confidence levels of the results obtained by the reference method, there are no significant differences in the results obtained by the two methods. Further, the precisions (the standard deviations) have to be satisfactory for both methods.



HyServe Compact Dry ETB Method for the Enumeration of *Enterobacteriaceae* in Foods
NordVal Certificate No. 034

Field of application

HyServe Compact Dry ETB is a ready-to-use, selective plate containing glucose for the enumeration of *Enterobacteriaceae*.

Principle

An aliquot of 1 mL of an appropriate dilution is plated onto a Compact Dry ETB plate. The plate is incubated at 37 ± 1°C and colonies (red/purple) are counted after 24 ± 2h.

Reference method

ISO 21528-2:2004: "Microbiology of foods and animal feeding stuffs. Horizontal method for the detection and enumeration of *Enterobacteriaceae* - part 2: Colony Count Method".

Continued on page 8

Suplier of HyServe products:

HyServe GmbH & Co. KG

Hechenrainerstr. 24
82449 Uffing
Germany

E-Mail:
info@hyserve.com
Internet:
www.hyserve.com

Compact Dry ETB. Photo: www.hyserve.com

The HyServe Compact Dry methods are validated in accordance with ISO 16140, which harmonises with the NordVal Validation Protocol

Validation procedure

The validation was carried out as for HyServe Compact Dry TC, as described on page 7.

Results

In the comparison study, the lowest validated levels with satisfactory results were:

chicken: 0.8 log cfu/g
frozen fish: 2.0 log cfu/g
lettuce: 2.6 log cfu/g
milk powder: 2.0 log cfu/g
raw meat: 3.4 log cfu/g

HyServe Compact Dry ETB provides equivalent results as the reference method for the determination of *Enterobacteriaceae* in foods.

More than 10 laboratories were involved in each of the collaborative studies of the five HyServe Compact Dry Methods described in this NMKL Newsletter. Each HyServe Compact Dry Method was compared with a current ISO Standard. The laboratories analysed duplicates of milk samples on four levels including blind samples with the respective methods.

The mean values and standard deviations were calculated. The precisions, both repeatability and reproducibility, were satisfactory for all the methods.

All the results of the HyServe Compact Dry methods were included in the respective confidence levels of the reference method. Thus, the collaborative study also showed that we will expect to obtain comparable results with the HyServe Compact Dry methods and the respective ISO methods.

HyServe Compact Dry CF Method for the Enumeration of Total Coliforms in Foods

NordVal Certificate No. 035

Field of application

HyServe Compact Dry CF is a ready-to-use, dry, chromogenic plate for the enumeration of coliforms.

Principle

An aliquot of 1mL of an appropriate dilution is plated onto a Compact Dry CF plate. The plate is inverted and incubated at 37 ± 1°C and colonies (blue/blue green) were counted after 24 ± 2 h.

Reference method

ISO 4832:2006: "Microbiology of foods and animal feeding stuffs. Horizontal method for the enumeration of coliforms -- Colony-count technique."

Results

In the comparison study, the lowest validated levels with satisfactory results were:

chicken: 0.9 log cfu/g
frozen fish: 1.2 log cfu/g
lettuce: 2.0 log cfu/g
milk powder: 2.0 log cfu/g
raw meat: 3.4 log cfu/g

As for the selectivity, the HyServe Compact Dry CF is more selective than the ISO method. When testing for exclusivity, nine strains interfered, i.e. nine non-target strains turned out positives, with the ISO method, while only three out of the strains interfered on the HyServe Compact Dry CF . Otherwise, the results were equivalent.

HyServe Compact Dry EC Method for the Enumeration of *Escherichia coli* and Total Coliforms in Foods
NordVal Certificate No. 036

Field of application

HyServe Compact Dry EC is applicable for the enumeration of *E. coli* and/or determination of the number of total coliform bacteria in foods.

Principle

An aliquot of 1 mL of an appropriate dilution is plated onto Compact Dry EC plate. The incubation conditions tested in the study were 37 ± 1°C for 24 h ± 2 h. For the determination of *E.coli* count the blue colonies after 24 ± 2 h.

For the determination of the total coliforms red colonies are counted in addition to the blue ones.

Reference method

For the determination of *E.coli*: ISO 16649-2:2001: "Horizontal method for the enumeration of beta-glucuronidase-positive *Escherichia coli* -- Part 2: Colony-count technique at 44 degrees C using 5-bromo-4-chloro-3-indolyl beta-D-glucuronide."

For the determination of total coliforms: ISO 4832:2006: "Microbiology of foods and animal feeding stuffs. Horizontal method for the enumeration of coliforms -- Colony-count technique."

Results

HyServe Compact Dry TC provides equivalent results as the reference method for the determination of *E.coli* and total coliforms in foods.

In the comparison study, the lowest validated levels with satisfactory results were respectively:

For the enumeration of *E.coli*:		For the enumeration of the total coliforms:	
cooked chicken:	0.8 log cfu/g	cooked chicken:	0.9 log cfu/g
frozen fish:	1.9 log cfu/g	frozen fish:	1.0 log cfu/g
lettuce:	1.0 log cfu/g	lettuce:	2.0 log cfu/g
milk powder:	2.8 log cfu/g	milk powder:	2.7 log cfu/g
raw meat:	3.4 log cfu/g	raw meat:	3.5 log cfu/g

Compact Dry EC Photo: www.hyserve.com

The NordVal Certificates, which contains further information about the methods, are available at www.nmkl.org under NordVal

Salmonella spp. Detection with Real-time PCR
NordVal Certificate No. 041

Field of application

Danish Technological Institute, Danish Meat Research Institute, Denmark, has renewed the NordVal certificate for *Salmonella* detection method by real-time PCR.

The method is validated and found fit for analyses of raw meat and swabs from been and pork carcases.

Principle

The method describes a shortened pre-enrichment in buffered peptone water followed by DNA extraction and subsequent real-time PCR analysis.

For raw meat, the samples are pre-enriched for 12 h ± 2 h and for the swabs 14 h ± 1.5 h at 37 °C.

DNA extraction can be carried out by either boiling or by automated extraction such as KingFisher.

Reference methods

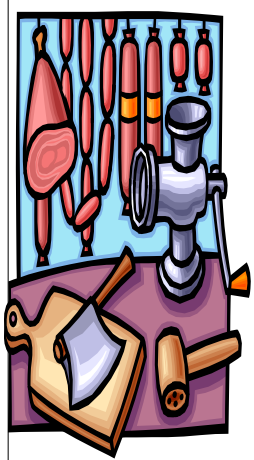
NMKL 71, 5th Ed., 1999: *Salmonella* spp. Detection in foods.

NMKL 187, 2007: *Salmonella* spp. Detection in foods, faeces and materials from primary animal production using MSRV.

Results

The method has been extensively validated both in a comparison study and in

Continued on page 10



a collaborative study. The results showed that the alternative method provide equivalent results to the reference method. Relative accuracy, relative sensitivity and relative specificity were satisfactory. The results are given in the NordVal Certificate at the NMKL's homepage. The results using KingFisher extraction and real-time PCR are also described in Food Appl. Environ, Microbiol 70, 7046-7052.

iQ-Check™ *Cronobacter* spp. in Infant Formula and Environmental Samples

NordVal Certificate No. 044

Field of application

This method from Bio-Rad Laboratories, France, is applicable for detection of *Cronobacter* spp. in infant formula and environmental samples.

In 2007, *Cronobacter* became the official bacterial genus name for the organisms which before was named *Enterobacter sakazakii*.

Photo:
www.bio-rad.com

Prinsiple

The iQ-Check™ *Cronobacter spp.* method is based on:

1) an enrichment step
- *for infant formula*: in BPW supplemented with vancomycin (10 µg/mL) for 20 h ± 2 h at 37 °C ± 1 °C, and a second enrichment step in BPW for 4 h ± 1 h at 37 °C ± 1 °C,
- *for environmental samples*: enrichment in BPW for 18 h ± 2 h at 37 °C ± 1 °C,

2) a DNA extraction
- easy protocol: 100 µL of enriched sample in 100 µL of lysis reagent
- the standard protocol: 1,0 mL of enriched sample, followed by centrifugation before the lysis in 200 µL lysis reagent

3) a real-time PCR.

Presumptive positive results in infant formula are confirmed by direct streaking of the subculture onto RAPID'*Sakazakii* Agar (24 h ± 2 h at 44 °C ± 1 °C). For environmental samples, the confirmation is carried out after a subculture of the enrichment in mLST (0.1 mL + 10 mL, 24 h ± 2 h at 44 °C ± 0.5 °C).

Referance method

ISO/TS 22964 (2006): Milk and milk products -- Detection of *Enterobacter sakazakii.*

Validation procedure

The method is validated in accordance with ISO 16140. The validations were conducted and organised by ADRIA Developpement, France, in 2012.

For the determination of relative sensitivity, relative specificity, relative accuracy and agreement between the iQ-Check™ *Cronobacter spp.* method and the reference method, a total of 171 samples were analysed. The samples were analysed with both methods.

For the determination of selectivity, i.e. how well the method manages to detect the target organisms from a wide range of strains (the inclusivity), and the lack of interference from a relevant range of non-target microorganisms (the exclusivity), a total of 83 strains were tested.

Further, a collaborative validation was carried out on a strain of *Cronobacter sakazakii* AD 940 at low levels with both the reference method and the iQ-Check™ *Cronobacter spp* method.

Results

For infant formula, the sensitivity of the iQ-Check™ *Cronobacter spp* method is better than the reference method. For the environmental samples, the relative sensitivity is somewhat lower than the NordVal requirement of 95%, however, the agreement between the reference method and the alternative method is satisfactory. The selectivity of the iQ-Check™ *Cronobacter spp.* method is also satisfactory.

13 laboratories participated in the collaborative study in 2012. The results showed some false positives with both methods (more with the reference method than the alternative method). The sensitivity was satisfactory for both methods for levels of 5-50 cfu/30g and higher.

Available NMKL Procedures

No 1, 2. Ed. 2005	Calibration and performance checking of laboratory balances
No 2, 1995	Performance check and in-house calibration of thermometers
No 3, 1996	Control charts and control materials in internal quality control in food chemical laboratories
No 4, 3. Ed. 2009	Validation of chemical analytical methods
No 5, 2. Ed. 2003	Estimation and expression of measurement uncertainty in chemical analysis
No 6, 1998	Yleiset ohjeet aistinvaraisten laboratorioiden laadunvarmistukseen (avail. Danish/Finnish)
No 7, 1998	Checking of UV/VIS spectrophotometers
No 8, 4. Ed. 2008	Measurement of uncertainty in quantitative microbiological examination of foods
No 9, 2. Ed. 2007	Evaluation of method bias using certified reference materials.
No 10, 2001	Control of microbiological media
No 11, 2.Ed. 2010	Procedure for sensory analysis of drinking water
No 12, 2002	Guide on sampling for analysis of foods
No 13, 2003	Volumetric control
No 14, 2004	SENSVAL: Guidelines for internal control in sensory analysis laboratories
No 15, 2004	Temperature control in microbiological laboratories
No 16, 2005	Sensory quality control
No 17, 2006	Guidelines for requirement specifications for food analyses
No 18, 2006	The use of reference materials, reference strains and control charts in a food microbiological laboratory
No 19, 2007	Guideline for sensorial analysis of food containers/packages
No 20, 2007	Evaluation of results from qualitative methods
No 21, 2008	Guide for sensory analysis of fish and shellfish
No 22, 2008	Considerations regarding evaluation of immunochemical test kits for food analysis
No 23, 2008	Guide on quality assurance in microbiological laboratories (replacing NMKL Report No. 5)
No 24, 2010	Guidelines for quality assurance for food chemical laboratories
No 25, 2012	Recovery information in analytical measurement

Nordic Committee on Food Analysis

c/o Norwegian Veterinary Institute
PB 750 Sentrum,
0106 Oslo,
Norway

E-mail: nmkl@vetinst.no

www.nmkl.org

NordVal is a committee under NMKL, certifying alternative methods. Information on the certified methods is available at www.nmkl.org under "list of methods".

The NMKL Action Plan for 2012/2013:

NMKL aims to maintain contact with, actively influence and participate in the food co-operation on all levels under the Nordic Council of Ministers. Moreover, NMKL will endeavour to clarify NMKL activities and objectives, also on a political level to the Food Department of EK-FJLS.

NMKL will consider the Nordic food authorities' priorities in environmental health hazards and health agents, but also place emphasis on food quality and integrity parameters.

NMKL will through its priorities consider the Nordic food industries' and the Nordic food laboratories' need for chemical, microbiological and sensory methods, as well as relevant laboratory guidelines.

NMKL will actively disseminate knowledge in the Nordic region and also internationally on relevant topics through courses / seminars / workshops.

NMKL will observe and participate actively in CEN, the European forums, ESN (European Sensory Network), E3S (European Sensory Science Society), AOAC INTERNATIONAL, IDF, ISO and Codex work, and actively offer NMKL publications to these forums. Through increased collaboration with other organisations, duplication of work within in e.g. method performance studies, can be avoided.

NMKL will maintain NordVal's activities within microbiology, chemistry and also sensory analysis, if required.

NMKL aims to validate NMKL methods collaboratively, and will to an increasing degree to adapt international practices where collaborative validation is not possible.

NMKL considers it important to monitor the development of new analytical techniques, and will encourage and support the development work being carried out to ensure that these can be used in NMKL methods. This is to meet society's and the industry's needs and requirements for more efficient, and environmentally friendly methods of analysis.

NMKL will continue to be available as a forum for cooperation / information exchange for the reference laboratories, and shall inform and update the list of EU reference laboratories (EURL) and national reference laboratories (NRL) in the Nordic countries.

NMKL will maintain information about proficiency tests on NMKL's website, www.nmkl.org.

NMKL will work for promoting cooperation between the Nordic accreditation bodies to harmonise requirements made to testing laboratories.