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NMKL Newsletter

NORDIC COMMITTEE ON FOOD ANALYSIS

CONTENTS:

NEW NMKL METHOD

- **Fat. Determination in fish, fish feed and fish meal by LF-NMR** (NMKL 199)

NEW NMKL PROCEDURES

- **Sensory analysis of meat and meat products,** NMKL Procedure no. 29, 2014
- **Statistical evaluation of results from quantitative microbiological examinations,** NMKL Procedure no. 30, 2014

EVENTS

- **Food Labs in a Crystal Ball - Future Challenges in Food Analysis,**
  AOAC Europe - NMKL - NordVal International, Symposium 2015
  21 - 22 May 2015 in Stockholm, Sweden
- **NMKL courses for microbiological lab technicians**
- **NMKL and Eurachem Workshop on Measurement Uncertainty**

NEW NORDVAL CERTIFICATES

- **HyServe Compact Dry ETC for the Enumeration of *Enterococci*** (NORDVAL 047)
- **HyServe Compact Dry TC for the Enumeration of Total Viable Organisms** (NORDVAL 033)
- **HyServe Compact Dry ETB for the Enumeration of *Enterobacteriaceae*** (NORDVAL 034)
- **HyServe Compact Dry CF for the Enumeration of Total Coliforms** (NORDVAL 035)
- **HyServe Compact Dry EC for the Enumeration of Total Coliforms/*E.Coli*** (NORDVAL 036)
- ***Salmonella* detection method by real-time PCR** (NORDVAL 041)
- **iQ-Check™ *Cronobacter* spp.** (NORDVAL 044)

FROM NMKL'S 68TH ANNUAL MEETING

THE WORKING PROGRAM OF NMKL

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

New NMKL Method

Fat. Determination in fish, fish feed and fish meal by low field nuclear magnetic resonance (LF-NMR). (NMKL 199, 2014)

Fat content of fish, fish feed and raw materials are important quality parameters influencing the texture, taste and nutritional value of the product. Thus, routine and accurate measurement of the fat and oil is necessary to ensure that products are in compliance with labelling statements.

Dr. Päivi A. Teivainen-Lædre

The ^{1}H Low field NMR (LF-NMR) method was developed to be a rapid, non-destructive determination of fat in fish flesh, fish feed and fish meal. High throughput makes LF-NMR a cheap technique on a sample basis. Finally, the method is environmentally friendly; no reagents are needed and no chemical waste produced.

The method is based on hydrogen nucleus acting as tiny magnets when placed in a static magnetic field. The nucleus can be manipulated by transmitting radio pulses with appropriate frequencies (energy) towards the sample. The nucleus will then start a precessional motion. When placing the sample within a coil, the precession can be detected. The strength of the signal will be directly proportional to the number of hydrogen atoms in the sample.

Quantification by NMR is very sensitive to temperature. It is important to verify at all times that this is correct and stable. A temperature of 40 ± 2 °C is recommended for the method. However, other temperatures might also be used, e.g. 35 °C or 45 °C. It is of major importance to keep the temperature constant when measuring. Water, carbohydrates and proteins will all be potential interferences since all hydrogen atoms will contribute to the signal, which is resolved in this method.

Interlaboratory validation studies were carried out in the period from 2011 to 2014. Nine laboratories, from Norway, Sweden, Denmark, Germany and United Kingdom participated without any economical compensation. The laboratories represented research, commercial, industrial and state regulatory laboratories. They analysed duplicate samples of fish flesh, fish feed and fish meal with different fat content. Two validation studies were carried out. In the first study, the results were satisfactory for fat content above 20%, however not for low levels. It was found that tau value of the instrument was essential. Therefore, in the second study, the laboratories were advised to use tau-value of 50 µs. In this study, seven laboratories analysed fish flesh, fish feed and fish meal. The results are given table on page 2.

Dr. Päivi A. Teivainen-Lædre, Skretting ARC, Norway was the referee and organised the validation studies.

Contact persons were: Astrid Nordbotten, Norway, Carsten Theisen, Denmark, Sonja Latvakoski, Finland, Heiða Pálmadóttir, Iceland Sören Wretling, Sweden

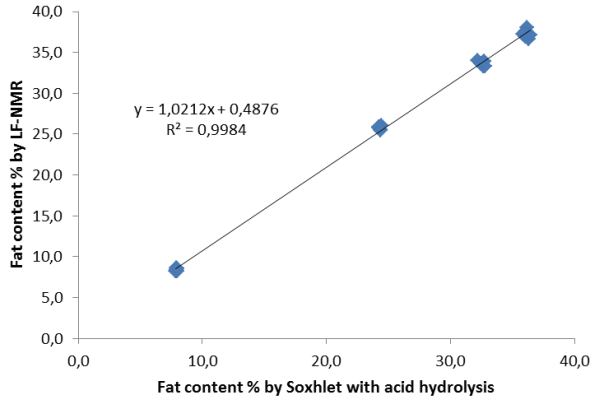
CONT. FROM PAGE 2: FAT BY LF-NMR (NMKL 199, 2014)

Matrix Fat Content	Fish flesh Low	Fish feed Medium	Fish feed High	Fish meal
No. of duplicates	7	7	7	7
Mean (%)	5.4	25.8	38.4	9.9
RSD(r) (%)	2.4	0.7	1.0	0.7
RSD(R)(%)	4.3	4.1	2.9	3.8
HorRat	1.4	1.7	1.3	1.4

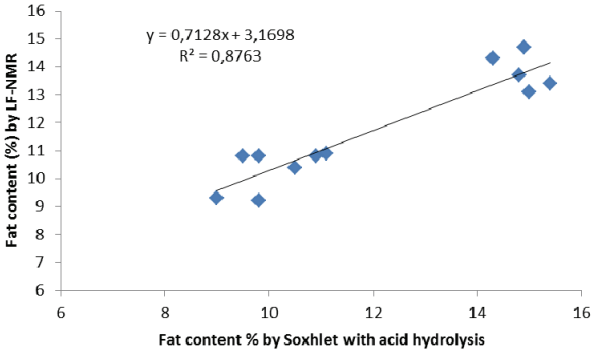
RSD(r) relative standard deviation of repeatability
RSD(R) *relative standard deviation of the reproducibility*
HorRat ≤ 2 indicates satisfactory precision.

The results, as shown in the table above, were satisfactory for all samples.

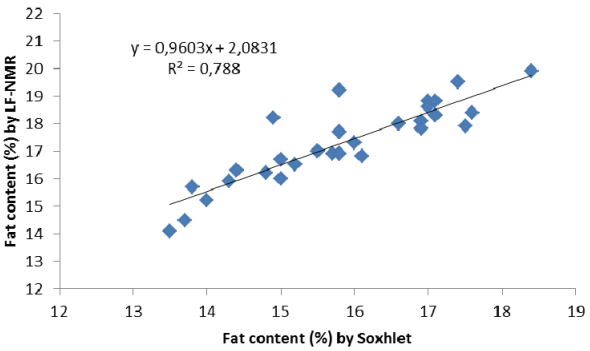
The NMR method was compared against a Soxhlet method. For fish feed and fish meal, there was no significant difference between the results. For fish meat, the NMR method gave slightly higher results than the Soxhlet method.



The figure above shows a comparison of 23 different samples of feed were analysed by wet-chemical method against LF-NMR.



The figure above shows a comparison of 12 samples of fish meal analysed by wet-chemical method against LF-NMR.



The figure to the left shows a comparison of 30 samples of fish meat analysed by wet-chemical method against LF-NMR.

New NMKL Procedure

Guidelines for Sensory Analysis of Meat and Meat Products, (NMKL Procedure no. 29, 2014)

NMKL Procedure No. 29 "Guidelines for sensory analysis of meat and meat products" is elaboarated in a project group consisting of: Marit Rødbotten, Norway; Halina Agerhem, Sweden; Satu Mustalahti, Finland; Emilia Martinsdottir, Iceland and Camilla Bejerholm, Denmark (project leader).

The procedure describes the aspects that are specific to the sensory analysis of meat and meat products. Meat is a biological material, and the preparation is therefore of great importance for the sensory quality. Thus, it is focused on the methods of preparation; which are suitable for different types of muscle. Further, the selection and training of sensory panels and the number of samples and replicates are also described.

The procedure is for time being only available in English.

Dr. Camilla Bejerholm, Teknologisk Institut, DMRI

New NMKL Procedure

Statistical Evaluation of Results from Quantitative Microbiological Methods (NMKL Procedure no. 30, 2014)

This NMKL Procedure is a copy of the Report No. 1, 2nd. Ed. 1983, which was elaborated by Prof. Dr. Seppo Niemelä, of the University of Helsinki, with assistants from members of the Nordic Committee on Food Analysis. The series of NMKL reports are no longer available at NMKL, therefore this report has been elaborated as an NMKL Procedure. The procedure has the following contents:

Mathematics of the colony count

- Use of the X^2-distribution
- The G distribution
- Averaging colony counts
- Error of the mean
- How many parallel plates?

Statistical testing within the basic experimental unit

- Comparing a single test result with a theoretical value
- Testing mutual agreement of colony numbers within the basic experimental unit
- Rejection of improbable results
- Partially enumerated plates
- Detecting a fixed difference

Statistical tests beyond the basic experimental unit

- Transformations
- Comparisons using the t-test
- Comparison of a set of densities against a standard

Introduction to advanced testing

- Analysis of variance
- Correlation
- Partial correlation
- Multiple correlation and regression, and other methods

"Most probable number" methods

- Single dilution
- Three or more dilutions
- Thomas' approximate MPN formula
- Precision of MPN estimates
- Use of MPN estimates in calculations

Food Labs in a Crystal Ball

Future Challenges in food Analysis

AOAC Europe - NMKL - NordVal International, Symposium 2015

21 - 22 May 2015 at Fazer Conference Center, Stockholm, Sweden

AOAC Europe and NMKL / NordVal International would like to repeat the success of the Symposium in 2012, and arrange a symposium including poster presentations and exhibitions on Kungsholmen in Stockholm 21-22 in May 2015.

May 21, we'll start after lunch in plenary with focus on future challenges in food analysis. There will be presentations from the European Commission, the EU Commission's laboratory, the Scientific Committee of Food Safety, from universities, food industries and from standardisation organisations. On Day 2, there will be parallel sessions focusing on new trends in microbiological and chemical analyses, respectively.

Help us to spread the information about the symposium, set the date and sign up.

21 May Plenary Session - preliminary Program

12:30 - 13:00	Registration / Exhibition
13:00 - 13:15	Opening /Welcome *by the chairs of AOAC Europe and NMKL/NordVal International*
13:15 - 13:45	From the Commission's perspective *by a speaker from DG Sanco (tbc)*
13:45 - 14:15	The future from Commission Food Laboratory perspective *by Dr. Franz Ulberth, European Commission, Joint Research Center*
14:15 - 14:45	Future Challenges in Food Analysis *by Prof. Dr. Med. Jan Alexander, Chairman of the Norwegian Scientific Committee of Food Safety*
14:45 - 15:45	Coffee/Tea break and Exhibition
16:15 - 16:45	Innovation at laboratories *by Prof. Lene Lange University in Copenhagen (tbc)*
15:45 - 16:15	Industry and an SDO's perspective *by Dr. Eric Köning, President of AOAC International, Nestle*
16:45 - 17:15	Standards versus method criteria *by Hilde Skår Norli, NMKL / Norwegian Veterinary Institute*

AOAC Europe - NMKL - NordVal International, Symposium 2015

Preliminary program

22 May	Session for Biotargets	Session for Chemical targets
09:00 - 09:30	GMI: Global Microbial identifier—The future of microbiology, *by Prof. Jørgen Schlundt, DTU Management Engineering, Denmark*	Food Control: authentication using contaminant profile *by Dr. Stig Valdersnes, National Institute of Nutrition and Seafood Research, Norway*
09:30 - 10:00	Listeria-outbreak in Denmark, self-monitoring, food control, sampling *by Dr. Jens Kirk Andersen, Technical University of Denmark*	Strategies for analysis of unknown samples. Non targeted screening with LC-TOF *by Dr. Johan Rosén, National Food Agency, Sweden*
10:00 - 10:30	Sampling and analytical methods at early process steps to ensure the food safety of final products *by Dr. Taran Skjerdal, Norwegian Veterinary Institute*	An overview of new technologies in veterinary chemical residue control in food by rapid methods: immuno-microbio-receptor-biosensing *by Dr. Valerie Gaudin, Anses - Laboratory of Fougeres*
10:30 - 11:00	Coffee/tea break / Exhibition/ Posters	
11:00 - 11:30	MALDI-TOF *by an expert from National Veterinary Institute, Sweden*	Preparedness: Method for analysis of fish scales, *by Dr. Belina Flem Geological Survey of Norway*
11:30 - 12:00	Next generation sequencing (pathogenic strains) *by Dr. Thomas Hankeln, University Mainz, Germany*	Microplastic in Food and Environment *by Dr. Ruud J B Peters, Wageningen University, the Netherlands*
12:00 - 12:30	Verification of microbiological methods, *by Dr. Charlotta Engdahl Axelsson, Eurofins, Sweden*	New methods for allergens, *by Dr. Bert Popping*
12:30 - 13:30	Lunch / Exhibition /Posters	
13:30 - 14:00	Use of alternative methods versus reference methods, interpretation of certificates, acceptance criteria—*NordVal International*	*Screeing by using TOF— Dr. Hans Mol WUR, NL*
14:00 – 14:30	News from the vendors	Multicomponent methods, *by Dr. Michelangelo Anastassiades, EU RL Stuttgart, Germany*
14:30 – 15:00	News from the vendors	Process contaminants/ Perfluororganic methods, *by Dr. Senja Kryer, Technical University of Denmark*
15:00 - 15:30	Coffee/tea break / Exhibition/ Poster	
Plenary		
15:30 - 16:15	Food Scanning for contaminants - next generation consumer devices *by Dr. Menahem Kaplan Consumerphysics / SCIO, Israel Consumerphysics / SCIO, Israel*	
16:15 - 16:45	To be determined	
16:45 - 17:00	Closure	

AOAC Europe - NMKL - NordVal International, Symposium 2015

Abstracts for posters

Please forward abstracts on posters (max 150 words) before 15 March 2015.
AOAC Europe has a Best Poster Award, where the winner will be grated free attendance to the 2016 AOAC Europe Workshop including travel expenses.

Exhibition

There are room for about 15 exhibitors (about 1 x 2 m table).
Binding registration before 1 Mars 2015.
Since the space is limited, first come first served applies.

Language

English.

Accommodation

There are several hotels close to Fazer Restaurant & Conference at Fleminggatan, which is about 10 min walk from Stockholm Central Station. Please make your own reservation. For instance at Choice Hotel Amaranten, which is only a 3 min walk from the venue.

Registration

Click here for registration or copy the following link: http://1drv.ms/1s3Ll1r

Fee:

- Students: 100 € (NOK 900)
- Members/Subscribers: 300 € (NOK 2500)
- Others: 350 € (NOK 3000)

Deadline for registration: 15 April 2015

- Exhibitors: 1500 € (covers facilities and registration for 2 persons).

Program Committee
Pierre Metra
Sune Eriksson
Klaus Reif
Bert Pöpping
Eric Verdon
Suvi Ojanpera
Tuija Pihlström
Dag Grønningen
Franklin Georgsson
Arne Højgård Jensen
Hilde Skår Norli

For any questions,
Please email nmkl@vetinst.no

NMKL Courses for Microbiological Lab Technicians

NMKL welcomes the registrants to courses at:

- Matis, Reykjavik, 20 Nov. 2014
- Finnish Food Safety Authority, Evira, Helsingfors, 24 Nov. 2014
- Norwegian Veterinary Institute, Oslo, 27 Nov. 2014

The courses in Denmark and Sweden have been postponed to:

- 27 Jan. 2015 at the National Food Agency, Uppsala, Sweden
- 30 Jan. 2015 at the University of Copenhagen, Frederiksberg C

There are still possible to register for the courses in January 2015.
The course will give introduction to different analytical techniques, sample preparation, control of equipment, validation and verification of methods. *The program is available at www.nmkl.org or click here.*

NMKL and Eurachem Workshop on Measurement Uncertainty

Copenhagen, 29 and 30 September 2014, NMKL and Eurachem held a joint workshop on measurement uncertainty (MU) in chemical analysis of food and feed. The participants (about 30) from Denmark, Finland, Iceland, Norway, Sweden and Slovenia learned about

- general aspects of MU,
- relationship between MU and bias,
- MU from sampling,
- MU in multicomponent analysis methods and non-destructive analytical methods,
- "Fitness for purpose" and conformity assessment, and
- available online MU courses and MU-kit.

There were also roundtable discussions. It could be concluded that laboratories estimate MU, but not all states the MU when reporting the results. Few laboratories correct for bias, however, several correct for recovery. Some participants had also experience in estimating MU from sampling.

NMKL gives special thanks to Bertil Magnusson, Joakim Engman and Wolfhard Wegscheider for their efforts and contributions to this workshop. This was the first joint NMKL Eurachem workshop, and based on its success, it should not be the last.

Bertil Magnusson, Eurachem and Hilde Skår Norli, NMKL shake hands for the good cooperation. Photo: Lorens Sibbesen

New NordVal Certificate

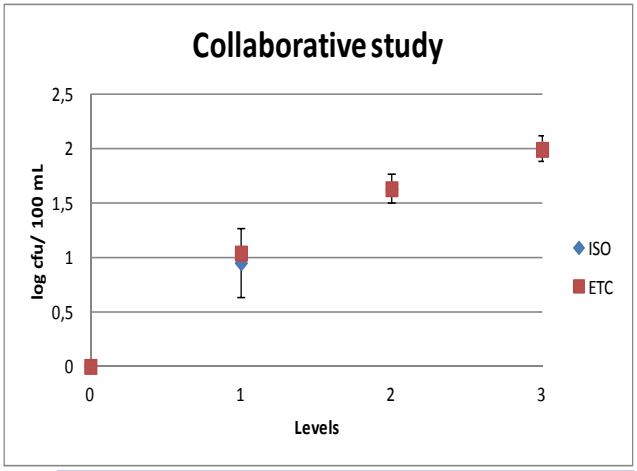
NordVal 047: HyServe Compact Dry ETC for enumeration of Enterococci in water intended for human consumption

HyServe Compact Dry ETC is a ready-to-use, dry plate medium containing a chromogenic medium and selective reagents for the detection and enumeration of enterococci. Enterococci appear as blue colonies after 24 hours of incubation at 36 ± 2 °C.

Photo: from www.hyserve.com

CCFRA Technology Limited, Chipping Campden, UK has undertaken extensive validations of HyServe Compact Dry ETC. Comparative studies have been conducted both in accordance with the requirements of ISO 17994: Water quality - Criteria for Establishing equivalence between microbiological methods, and according to the NordVal validation protocol (and ISO 16140). The method is tested against ISO 7899-2:2000: Water quality - Detection and enumeration of intestinal Enterococci - Part 2: Membrane filtration method.

The validations were performed on tap drinking water, bottled water with and without gas, water from drinking fountain and water used in the process. For each of these five categories, five to nine levels with eight parallels for each level were analysed. Furthermore, Campden arranged a collaborative study where eight laboratories submitted valid results of duplicates at three levels analysed by both the reference method and the HyServe Compact Dry ETC.



The graph shows overlapping results obtained by the ISO method and the HyServe Compact

The extensive validations showed that there was no significant difference between the reference method and the HyServe Compact Dry ETC for determination of Enterococci in water intended for human consumption.

For the NordVal Certificate, including the results of the validations, click here, or copy the following link: http://nmkl.org/dokumenter/nordval/Sertifikater/NordVal047.pdf,

Renewed NordVal Certificate

NordVal 033: HyServe Compact Dry TC for the Enumeration of Total Viable Organisms in Foods

HyServe Compact Dry TC is a ready-to-use, dry, chromogenic plate for the enumeration of total viable organisms count. An aliquot of 1 mL of an appropriate dilution is plated onto a Compact Dry TC plate. The plate is incubated at 30 ± 1°C for 48 ± 3 h and 72 ± 3 h, respectively.

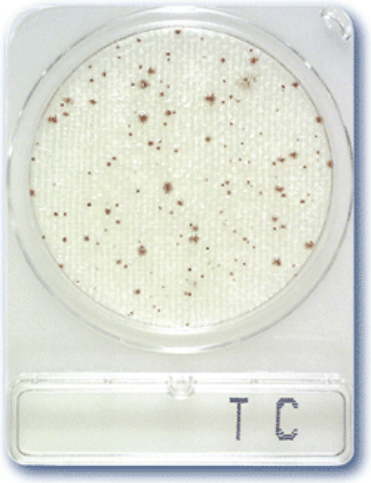
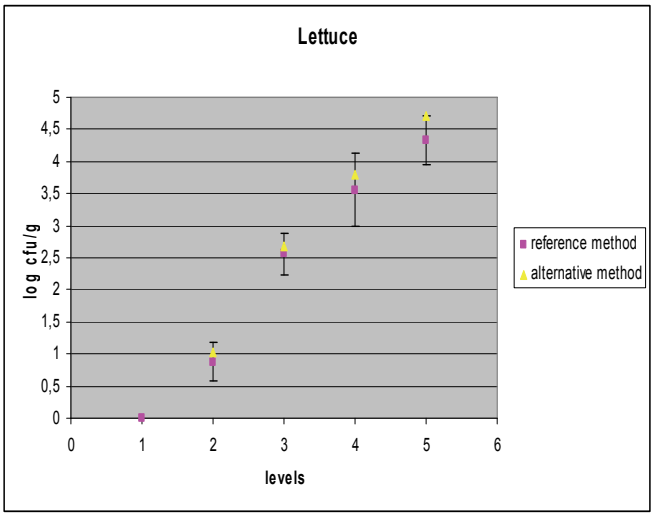


Photo from www.hyserve.com

HyServe Compact Dry TC was compared against ISO 4833:2003: "Microbiology of foods and animal feeding stuffs. Horizontal method for the enumeration of microorganisms. Colony count techniques at 30°C." The method validations were carried out by Campden, UK, on 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.

The means and the standard deviations 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 easily illustrated that the alternative method provides equivalent results to 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.

For the NordVal Certificate, including the results of the validations, click here, or copy the link: http://www.nmkl.org/dokumenter/nordval/Sertifikater/NordVal033_2014.pdf.

Renewed NordVal Certificate

NordVal 034: HyServe Compact Dry ETB for the Enumeration of *Enterobacteriaceae* in Foods

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

Compact Dry ETB. Photo : www.hyserve.com

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 (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") for the determination of *Enterobacteriaceae* in foods.

For the NordVal Certificate click here, or copy the link: http://www.nmkl.org/dokumenter/nordval/Sertifikater/NordVal034_2014.pdf

Renewed NordVal Certificate

NordVal 035: HyServe Compact Dry CF for the Enumeration of Total Coliforms in Foods

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

The HyServe Compact Dry CF is more selective than the reference method, ISO 4832:2006: "Microbiology of foods and animal feeding stuffs. Horizontal method for the enumeration of coliforms -- Colony-count technique." 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.

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

For the NordVal Certificate, click here, or copy the link: http://www.nmkl.org/dokumenter/nordval/Sertifikater/NordVal035_2014.pdf

Renewed NordVal Certificate

NordVal 036: HyServe Compact Dry EC the Enumeration of *Escherichia coli* and Total Coliforms in Foods

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

Compact Dry EC

Photo from www.hyserve.com

Reference methods

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 to the reference methods 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

For the NordVal Certificate, click here, or copy the link: http://www.nmkl.org/dokumenter/nordval/Sertifikater/NordVal036_2014.pdf.

Withdrawn Methods

NMKL 74, 2000: "Microorganisms, psychrotrophic. Determination by the colony count method." is withdrawn from the NMKL method collection as the method is included in NMKL 86.

NordVal Certificate No.026: foodproof® E.coli O157 Detection Kit in combination with foodproof® ShortPrep II Kit, expired 1 November 2014. BC-Diagnostics did not wish to renew the certificate.

These methods can no longer be refereed to.

Renewed NordVal Certificate

NordVal 041: Salmonella detection method by real-time PCR

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 cattle and pork carcases.

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.

The method has been extensively validated, including 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 using KingFisher extraction and real-time PCR are also described in Food Appl. Environ, Microbiol 70, 7046-7052. For the NordVal Certificate, click here, or copy the link: http://www.nmkl.org/dokumenter/nordval/Sertifikater/NordVal041_2014.pdf.

The certificates are available at www.nmkl.org under "NordVal" and "NordVal Certificates".

The certificates include the results of the validations; Selectivity (inclusivity / exclusivity) and the reliability of the method; sensitivity, accuracy, and agreement between the reference method and the alternative method.

Renewed NordVal Certificate

NordVal 044: iQ-Check™ *Cronobacter* spp.

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

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

- 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,
- 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
- Real-time PCR.
- Confirmation 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).

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.

For the NordVal Certificate, click here (Link: http://www.nmkl.org/dokumenter/nordval/Sertifikater/NordVal044.pdf).

NMKL's 68th Annual Meeting, 23– 26 August at Stykkishólmur, Iceland

The Chair of NMKL, Ulla Edberg, National Food Agency, Sweden, welcomed the participants with the following: *NMKL today is a modern, well-maintained and up-to-date organisation. An organisation does not exists by it selves, but is entirely dependent on the people involved; their knowledge and expertise. All the five Nordic countries participate in the work of NMKL in order to improve and develop support for food laboratories worldwide. Our work is important in strengthening the Nordic region's position internationally.*

In brief, the tasks of NMKL are:

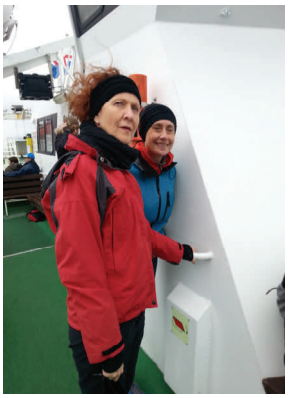
- *to be a Nordic expert network for food analysis,*
- *to provide validated methods and methods that are granted review of high technically quality for food and feed analyses,*
- *to review and certify (via NordVal International) alternative methods for food and feed analysis,*
- *to develop procedures and guidelines for supporting laboratories in quality assurance,*
- *to arrange courses and seminars on relevant topics.*

The main work at annual meetings takes place in the sub committees, where all the projects on the working program are discussed. Further, the members discuss and exchange information on relevant issues. The sub committees are chaired by the following chairpersons:

Sub 2: Microbiology: Franklin Georgsson, Matis, Iceland

Sub 3: Chemistry: Liv Kukkonen, Evira, Finland

Sub 4: Sensory: Grethe Hyldig, DTU Food Institute, Denmark



The Icelandic National Committee laid a sound basis for a good technical as well as social program for the meeting. Matis and Mjólkursamsalan sponsored participants with a get-together party, sightseeing tours, and gala dinner during the annual meeting.

Iceland offers beautiful nature. We also waited in anticipation for a possible major eruptions from the volcano under Bárðarbunga, but the volcano held its touristy eruption until after the annual meeting.

NMKL's Working Program

Microbiology:

- Aerobic or anaerobic microorganisms or bacterial spores. Enumeration on Blood Agar. (NMKL 189)
- Sulphite reducing clostridia (NMKL 56)
- *Salmonella,* detection using MSRV (NMKL 187)
- *Yersinia enterocolitica,* culture method (NMKL 117)
- *Yersinia pseudotuberculosis,* (NMKL 193)
- *Shigella,* culture method (NMKL 151)
- *Shigella,* PCR method (NMKL 174)
- *Clostridium difficilie*
- Halophilic and osmophilic bacteria (NMKL 171)
- *E.coli* O157 (NMKL 86)
- Quality control of PCR analyses
- Verification of microbiological methods
- Control of microbiological media
- MALDI-TOF

Chemistry:

- Methyl mercury, determination with isotope dilution GC-ICPMS
- Banned colouring agents in spices
- Folate, HPLC determination (NMKL 111)
- Fat, NMR determination
- Histamine, HPLC determination in fish
- Calibration of NIR and IR
- Control charts and control materials (NMKL Procedure No. 3)

Sensory:

- Guidelines for sensory evaluation of bread
- Sensory analysis of meat and meat products
- Recruitment/training and control of analytical panels, training of assessors
- Methods for discriminate tests (binomial tests)
- Sensory evaluation of marine oils
- Sensory analysis of Nordic berries

The NMKL members are appointed experts. There is one national committee in each Nordic country. If you like becoming a member, please contact the chairperson of the national committee in your country.

- Denmark: Arne Højgård Jensen (arho@fvst.dk)
- Finland: Tuula Pirhonen (tuula.pirhonen@evira.fi)
- Iceland: Franklin Georgsson (franklin@matis.is)
- Norway: Dag Grønningen (dag.gronningen@vetinst.no)
- Sweden: Ulla Edberg (uled@slv.se)

Further, contact NMKL if there is a method you would like to validate collaboratively and / or for obtaining an official status thereof.

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Single publications:

NMKL Methods: NOK 500,-

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Please note that you need to download the method yourselves after payment.