NMKL Newsletter
No. 65
May 2007

# Newsletter for the Nordic Committee on Food Analysis

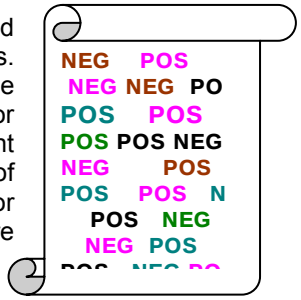
**Contents**



NMKL's WEB page:
**www.nmkl.org**

E-mail:
**nmkl@vetinst.no**

## NEW PROCEDURE: NMKL Procedure No. 20, 2007: Evaluation of results from qualitative methods




There are several recognized guidelines for the evaluation and statistical calculation of results from quantitative analyses. However, for the evaluation of qualitative results, where the results are given as "detected"/"not detected" or "positive"/"negative", there has long been a need for relevant guidelines. A standard and some guides for the evaluation of alternative microbiological methods are available, but none for the validation of conventional methods or methods where there are no "reference" methods to compare with. The NMKL Procedure No. 20 describes how to evaluate qualitative results from chemical, sensorial or microbiological methods. For instance by,

- a comparison of results from two qualitative methods, of which one may be an alternative method (test-kit),
- evaluation of a method against expected (true) results, performed in own laboratory ("in-house" validation),
- a full collaborative method validation of a qualitative method, or
- validation conducted at a few chosen laboratories (intermediate validation).

The procedure also describes the evaluation of semi-quantitative methods, and is meant to be a procedure that can be used by everyone, without requiring profound statistical knowledge.

To evaluate the data, method parameters such as the following are estimated:

- sensitivity
- accuracy
- specificity
- false positives
- false negatives
- limit of detection
- the agreement between methods/parallels, κ(kappa)

To decide whether or not there is agreement between two methods, between replicates or between laboratories, the estimation of kappa is introduced. Kappa also indicates the degree of agreement. The procedure has been elaborated by a working group in NMKL including the following individuals:

Denmark: Torben Leth, The National Food Institute of the Technical University of Denmark, Eli V. Olsen and Jesper Blom-Hansen, Danish Meat
Finland: Tapani Lyytikäinen¸ Finnish Food Safety Authority
Iceland Heida Palmadottir, The Icelandic Fisheries Laboratories
Norway: Stig Larsen, Norwegian School of Veterinary Science, Per Lea, Matforsk, Hilde Skaar Norli (NMKL Secretary General and acting project leader), National Veterinary Institute
Sweden: Joakim Engman, Ingrid Malmheden Yman, Tommy Slapokas, National Food Administration

An Excel spreadsheet has been prepared for the calculations described in this procedure. The spreadsheet is elaborated by Joakim Engman, National Food Aministration of Sweden, and is available at NMKL's homepage: **www.nmkl.org.**

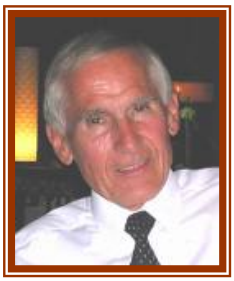
Copies: 1500
ISSN 1100-5386

Office address of the NMKL Secretary General:
**NMKL c/o National Veterinary Institute**, PB 8156 Dep. N-0033 Oslo, Norway.
NMKL Secretary General:
**Hilde Skaar Norli**, Tel.: +47 46 888807 / +47 2321 6249 E-mail: **nmkl@vetinst.no**

# NEW METHOD: NMKL Method No. 186. 2007:
# Trace elements - As, Cd, Hg, Pb and other elements. Determination by ICP-MS after pressure digestion.

## EXPERTS

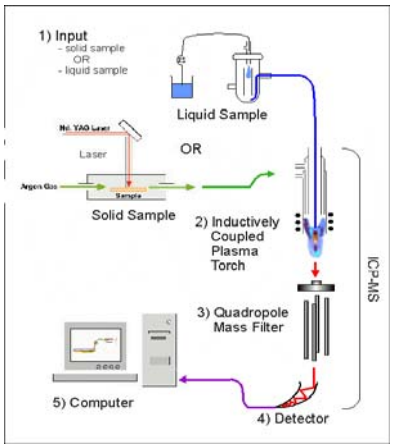
**Professor Kåre Julshamn**, National Institute of Nutrition and Seafood Research, has elaborated and arranged the collaborative validation study of this multi-method for the determination of trace elements by ICP-MS for low concentrations, in all types of food stuffs. Lars Jorhem, the National Food Administration, Sweden, Jens J. Sloth, the Technical University of Denmark, and Esko Niemi, the Custom Laboratory, Finland, assisted Julshamn in the elaboration of the method.



*Professor Kåre Julshamn*

## THE METHOD AND THE RESULTS FROM THE COLLABORATIVE VALIDATION STUDY

The samples are digested by acid under pressure and analysed by ICP-MS.




The method was validated in a collaborative study arranged in 2006. 14 laboratories participated. Each laboratory analysed 16 samples, consisting of blind duplicates of 8 sample matrices of different concentration levels. The sample matrices were: carrot, minced fish, mushroom (a CRM from the National Food Administration, Sweden), wheat flour, Diet E (simulated diet, a CRM from the National Food Administration, Sweden), scampi powder, mussel powder and Tort-2 lobster (a CRM from NRC Canada).

The samples were analysed for arsenic, cadmium, mercury, and lead. For arsenic, the limit of quantification was about 0.02 mg/kg. The lowest validated level for cadmium was 0.033 mg/kg, for mercury 0.047mg/kg, and for lead 0.013 mg/kg. All the HorRat values for the results above the limit of quantification were < 2.0, and this indicates satisfactory results for all the matrices. The Z-scores for the three CRMs were < 2.0, which indicates satisfactory trueness (no method bias).

## THE FOLLOWING LABORATORIES PARTICIPATED IN THE VALIDATION STUDY:

- Institute Kirchhoff Berlin GmbH, Berlin, DE
- Laboratorio Arbitral Agroalimentario, Madrid, ES
- Landesamt fur Verbraucherschutz, Des Landes Sachsen-Anhalt, Halle, DE
- Bayerisches Landesamt fur Gesundheit und Lebensmittelsischerheit, Dientststelle Erlangen, DE
- U.S. Food and Drug Administration, Center for Food Safety and Applied Nutrition, College Park, USA
- Analytica AB, Luleå, SE
- ITM Stockholms Universitet, SE
- AnalyCen Nordic AB, Lidköping, SE
- Livsmedelsverket, Uppsala, SE
- Bayerisches Landesamt für Gesundheit und Lebensmittelsicherheit, Oberscleissheim, DE
- Nestlé Research Center, Lausanne, CH
- CSL, Sand Hutton, York, UK
- Food and Consumer Product Safety Authority (VWA), CD Eindhoven, NL
- Norwegian Institute for Water Research, Kjeller, NO
- Norwegian institute for Air Research, Kjeller, NO

## MAXIMUM LIMITS FOR TRACE ELEMENTS

In the EU, maximum levels are given for cadmium, mercury and lead in foods for reasons of food safety. For cadmium, the maximum level varies from 0.05 mg/kg edible food for meat, fish and vegetables, to 1.0 mg/kg edible food for shellfish. For mercury, the maximum limits apply mainly to seafood: 0.5 mg/kg edible food for most species. For lead, the limit varies from 0.1 mg/kg edible food for meat, vegetables and fruit, to 1.5 mg/kg for shellfish.

Most foodstuffs contain relatively low levels of arsenic, except certain foods of marine origin. The arsenic content in fish and seafood are elevated compared to other food sources, and varies from 0.1 to 250 mg/kg edible food. In seafood, the lowest levels of arsenic are found in marine mammals, while the highest levels are found in certain fish such as skate and lemon sole, and in shrimps. The levels are high in marine organisms as there is a relatively high content of arsenic in sea water (usually 1-2 µg/L), and because arsenic is accumulated in the organisms. Studies of the biotransformation of arsenic in the marine environment, have given results which show that inorganic arsenic in sea water is conformed into organic arsenic, and up-concentrated in marine organisms. Fish captured in brackish and fresh water, normally have a considerably lower arsenic content than is generally found in marine fish.

A few countries have implemented an upper limit for total arsenic content in foods, while others have set an upper limit for inorganic arsenic in some seafood products. JECFA (the toxicological expert committee of CODEX) has introduced a provisional tolerable weekly intake of inorganic arsenic of 15 µg/kg body weight. This corresponds to 0.9 mg inorganic arsenic per week for an adult of 60 kg. As the authorities require documentation of the content of contaminants in foods, trace elements included, there is a real need for well documented analytical methods for trace elements.

# NEW METHOD: NMKL Method No. 185, 2007: Acrylamide. Determination in bakery and potato products by LC-MS MS.

## EXPERTS

**PhD. Johan Rosen,** National Food Administration, Sweden, has elaborated this method. **PhD. Thomas Wenzl**, European Commission's Directorate General Joint Research Center, EC DG-JRC, arranged the collaborative validation study in cooperation with the National Food Administration, Sweden. Other Nordic experts involved in the NMKL project include Kit Granby, the Technical University of Denmark, Susanna Eerola, Finnish Food Safety Authority, Heida Pálmadóttir, The Icelandic Fisheries Laboratories, Christian Dye, Norwegian Institute for Air Research, and Håkan Johnsson, National Food Administration, Sweden.

*PhD. Johan Rosen*

*PhD. Thomas Wenzl*

## THE METHOD PRINCIPLE

The test portion is extracted with water, and an isotope of acrylamide is added. The extract is then centrifuged, and the supernatant is cleaned up with two Solid Phase Extraction (SPE) columns.

1) The first SPE column, "Multimode", contains silica based C-18 groups, as well as anion and cation exchangers. Since acrylamide is not retained by the column, the extract is just passed and collected. The reason for using this column, is to retain as many matrix components as possible (non-polar compounds as well as anions and cations), without retaining acrylamide.

2) The second SPE column, "ENV+", contains a polymer based phase with a relatively high capacity to bind acrylamide. The extract is loaded, the column washed with water and finally eluted with 60% methanol in water. The purpose of this step, apart from further cleaning of the extract, is to concentrate the extract to obtain lower levels of quantification.

After evaporation of the methanol, the extract is analysed by Liquid Chromatography tandem Mass Spectrometry, LC-MS MS. For this purpose, an HPLC column with graphitised carbon is used, with a relatively high retention for acrylamide.

## RESULTS FROM THE COLLABORATIVE VALIDATION STUDY

16 laboratories from all over the world reported results from 13 different samples (different types of biscuits, crisp bread, toasted bread, spiked mashed potato powder and potato crisps), out of which 2 samples were blind samples. All of the 26 samples were presented to the participants as blind duplicates. The acrylamide concentration of the test materials varied from about 20 - 9000 µg/kg. The results which are given in the table below, indicate that the method's limit of quantification is about 16 µg/kg.

The precision of the results above the quantification limit were satisfactory. The Horwitz value was less than 2 for concentrations even below the levels preset by the Horwitz equation.

## ABOUT ACRYLAMIDE

In 2002, scientists at the Stockholm University discovered that acrylamide can be formed when preparing food at high temperatures, especially foods rich in starch, such as potato and cereal products, as well as coffee. (Acrylamide is formed in the so-called Maillard reaction, a chemical reaction between an amino acid and a reducing sugar which usually requires heating)

After the discovery in 2002, many studies have been conducted to find out how acrylamide is formed, how it can be reduced and how the analytical techniques for the determination of acrylamide can be improved. Many workshops have been held and many articles written. JECFA (FAO/WHO Joint Committee on Food Additives) carried out a thorough risk evaluation of acrylamide, and concluded that the level of this contaminant in several foodstuffs might contribute to the risk of cancer.

As acrylamide is not present naturally, but is formed during the heat processing of foods both commercially and in private kitchens when frying/deep-frying at high temperatures, it is difficult to regulate this contaminant. Thus, there is no maximum limit for acrylamide in foods. For drinking water, however, there is a maximum limit for acrylamide of 0.1 µ/L. Poly acrylamide is, among other things, used for purification of waste water, and also within the oil and paper industry. The residue of poly acrylamide is also regulated.

| Matrix | Outliers | No of Lab. | Mean µg/kg | RSDr (%) | RSDR(%) | HorRat value |
|---|---|---|---|---|---|---|
| Butter biscuits I | 9 | 7 | 16 | - | - | - |
| Toasted Bread | 3 | 13 | 38 | 5.5 | 8.5 | 0.3 |
| Butter biscuits II | 2 | 14 | 96 | 7.8 | 11.8 | 0.5 |
| Spiced biscuits | 4 | 12 | 249 | 3.7 | 10.4 | 0.5 |
| Potato Crisps A | 2 | 14 | 324 | 6.0 | 12.7 | 0.7 |
| Spiked mashed potato powder | 0 | 16 | 500 | 5.4 | 8.8 | 0.5 |
| Commercial potato crisps (A) | 2 | 14 | 628 | 8.9 | 13.2 | 0.8 |
| Crisp bread CRM | 3 | 13 | 980 | 3.1 | 5.4 | 0.3 |
| Potato Crisps (B) | 1 | 15 | 2512 | 5.9 | 11.7 | 0.8 |
| Commercial potato crisps (B) | 1 | 15 | 4051 | 4.3 | 8.9 | 0.7 |
| Potato crisps (C) | 2 | 14 | 9082 | 5.0 | 9.1 | 0.8 |

RSDr (%) = Repeatability, relative standard deviation, RSDR (%) = Reproducibility, relative standard deviation

# NEW METHOD: NMKL Method No. 136, 4th Ed., 2007: *Listeria monocytogenes.* Detection in foods and feeding stuffs and enumeration in foods.

## EXPERTS

This method is revised by **PhD. Tuula Johansson**, Finnish Food Safety Authority, (Evira). **PhD. Semir Loncarevic**, National Veterinary Institute, Norway, has arranged the collaborative validation study of the method. Other Nordic experts involved in the method work include Sven Qvist, Denmark, Margrét Geirsdottir**,** Matís - Food Research, Innovation & Safety, Iceland, Liv Marit Rørvik, Norwegian School of Veterinary Science, and Christina Normark, National Food Administration, Sweden.

*PhD. Tuula Johansson*

*PhD. Semir Loncarevic*

## THE METHOD PRINCIPLE

The method describes both the detection and the enumeration procedure of *L. monocytogenes*.

In the **detection** procedure, a two-step enrichment process is used. Primary enrichment is performed in an enrichment broth with reduced selectivity (Half-Fraser broth) at 30°C for 24 h. The primary enrichment culture is further enriched in a secondary enrichment broth with full selectivity (Fraser broth) at 37°C for 48 h. The cultures obtained from both the enrichment steps are plated out on an *L. monocytogenes* specific isolation medium, Agar *Listeria* according to Ottaviani and Agosti (ALOA), *Listeria monocytogenes* blood agar medium (LMBA) or a chromogenic *Listeria* agar medium equivalent to ALOA (for instance OCLA or LCA), as well as on another optional solid selective isolation medium. After incubation, presumptive *L. monocytogenes* colonies are confirmed by appropriate morphological and biochemical tests.

In the **enumeration** procedure, the initial suspension and/or its dilutions are surface plated on an *L. monocytogenes* specific isolation medium, ALOA or LMBA or a chromogenic *Listeria* agar equivalent to ALOA. After incubation, presumptive *L. monocytogenes* colonies are counted and confirmed using appropriate morphological and biochemical tests.

## THE COLLABORATIVE VALIDATION STUDY

In January /February 2005, Ph.D. Semir Loncarevic, National Veterinary Institute, arranged the collaborative study of this method. 18 laboratories participated in the detection part of the study and 17 laboratories participated in the enumeration part. The matrices included were vacuum-packed hot-smoked salmon, soft cheese and ham, and one feed matrix; wheat grain. A total of 24 samples for both the detection and the enumeration part of the study were analysed by each participating laboratory. ALOA (Agosti and Ottaviani *Listeria* Agar), LCA (Chromogenic *Listeria* Agar), OCLA (Oxoid's Chromogenic *Listeria* Agar) and LMBA (*Listeria monocytogenes* Blood Agar) were the selective culture media included.

## RESULTS: QUALITATIVE METHOD

The collaborative study showed that there were no statistical differences in the results for any of the matrices with the 4 different media, i.e. the media can be used interchangeably in this method. The sensitivity of *L.monocytogenes* in the food samples on ALOA, LCA, OCLA and LMBA varied from 94.4-96.4% after one-step enrichment (Half-Fraser). After two-step enrichment (Half-Fraser + Fraser), the sensitivities were 97.7-100%. For feeds the sensitivity was somewhat lower. The lowest validated level in the study was 12-25 cfu *L. monocytogenes* / 25 g sample. Positive samples are most often detected after Half-Fraser enrichment, which shortens the analysis time considerably. However, secondary enrichment cannot be totally left out, because samples with low levels of *L. monocytogenes*, with high levels of competing flora, and with injured *L. monocytogenes,* do need secondary enrichment.

## ABOUT *LISTERIA MONOCYTOGENES*

*L.monocytogenes* is mainly a food born pathogen, and can cause listeriosis in both humans and animals. The bacterium is commonly found in humans, animals, insects, soil and water.

The bacterium can grow at low temperatures, i.e. it can also multiply in refrigerators. In the Nordic countries, there are guidelines regarding *Listeria* in ready-to-eat foods. No *Listeria* should be detected in ready-to-eat foods that have a shelf-life of more than 15 days, and which also provide good growth conditions for the bacteria. Examples of such foods are half-fermented trout, vacuum-packed smoked salmon and cooked meats. Other exposed products are meat pate and soft cheeses. Usually a large number of the bacteria have to be present to cause infection.

Infection can result in flu-like symptoms. However, for certain groups of the population; pregnant women (foetuses), babies, elderly people and persons with a weakened immune system, the symptoms can be sepsis pest or meningitis. The relatively high mortality rate of listeriosis and the fact that the bacterium is so common, were the reasons why the EU Commission in the Spring of 2000 chose *Listeria* to be the first pathogenic bacteria for which harmonized maximum limits, control and administrative measures were to be evaluated. The Scientific Committee on Veterinary Measures relating to Public Health (SCVPH), has recommended the maximum level for *Listeria monocytogenes* to be 100 cfu/g.

*L. monocytogenes* is a short (0.5-2 μm), slender (0.4-0.5 μm) and Gram-positive rod (20 h culture). Some cells may be curved. It is catalase positive. The organism hydrolyses aesculin and is ß-haemolytic on blood agar with narrow zones of haemolysis around colonies, varying with the type of blood used. *L. monocytogenes* produces acid from rhamnose but not from xylose.

## RESULTS: QUANTITATIVE METHOD

The precision (repeatability and reproducibility) was satisfactory for the quantitative results of *L. monocytogenes* in all the samples, except for the wheat grain samples, which represented feeds.

Based on the results, ALOA, LMBA or chromogenic Listeria agar equivalent to ALOA, can be used as solid selective plating media in the enumeration of *L. monocytogenes* in foods. As the analysis of wheat grain did not obtain a satisfactory precision, the method cannot be recommended for the enumeration of *L. monocytogenes* in animal feedstuffs.

## PARTICIPANTS IN THE COLLABORATIVE STUDY

The study was conducted with financial support from EK-Livs and the National Veterinary Institute. The following laboratories participated:

- Food, veterinary and environmental agency, The Faeroe Island
- Danish Meat, Roskilde, Denmark
- Fødevareregion Ringsted, Denmark
- Fødevareregion Vejle, Denmark
- Fødevareregion Århus, Denmark
- Matís - Food Research, Innovation & Safety, Iceland
- ALcontrol AB, Linköping, Sweden
- AnalyCen Nordic AB, Lidköping, Sweden
- ALcontrol AB, Uddevalla, Sweden
- City of Helsinki Environment Centre, Environmental Laboratory, Finland
- City of Joensuu Food and Environmental Laboratory, Joensuu, Finland
- National Veterinary and Food Research Institute, Helsinki, Finland
- The Laboratory of Environmental Office of Jyväskylä City, Finland
- Norsk Matanlyse, Oslo, Norway
- LabNett Oslo – Akershus, Norway
- LabNett Hamar, Norway
- AnalyCen Moss, Norway
- Norwegian School of Veterinary Science

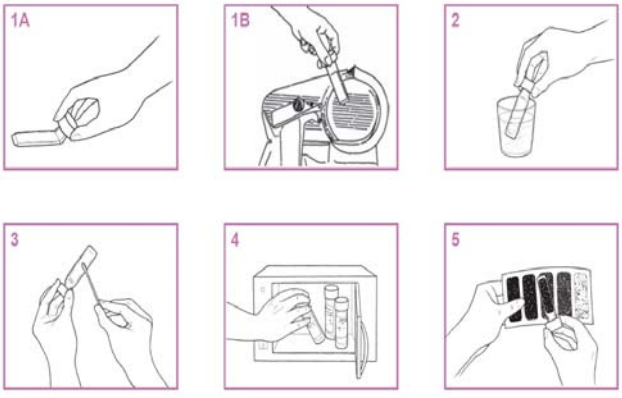
# NordVal Certificates


| | |
|---|---|
| Issued for: | **Hygicult® TPC** |
| NordVal No.: | 018 |
| First approval date: | 10 June 2005 |
| Renewal date: | 1 April 2007 |
| Valid until: | 1 April 2009 |

## Hygicult® TPC - a renewed NordVal approval.

**Hygicult® TPC** is developed for examination of the microbiological hygiene in different types of materials both solid, semi-liquid and liquid. Hygicult® is a modern type of agar slide, specially designed to enable reliable, economic and timesaving monitoring of microbiological hygiene. Hygicult® can be used directly on the work surface. However, it can also be used for examination of the bacteria content in fluids. Sampling and inoculation are performed by pressing the slide directly onto the work surface, transferring the sample directly from sterile swabs, or dipping the slide into fluids. Following incubation, the results are easily obtained by comparing the colony density on the agar slide against the density shown on the special model chart provided with the test kits – colony counting is not necessary. The procedure is illustrated below. A complete method description is enclosed in the kit.

Hygicult TPC is produced by Orion Diagnostica Oy, Finland. VTT Biotechnology, Finland, validated Hygicult TPC against NMKL Method No. 5:" Aerobic microorganisms and presumptive Enterobacteriaceae. Enumeration on surfaces and utensils." 12 laboratories participated in the study. The results documented no statistical difference in the performances between the Hygicult TPC and the other media included in the NMKL Method No. 5. The study is published in the Journal of AOAC International 83, 1357-1365: Salo, S., Laine, A., Alanko, T., Sjöberg, A.-M. and Wirtanen, G. (2000). Validation of the microbiological methods Hygicult dipslide, contact plate and swabbing in surface hygiene control: A Nordic collaborative study.



| | |
|---|---|
| Issued for: | **Bioline *Salmonella* Optima** |
| NordVal No.: | 010 |
| First approval date: | 4 Mai 2001 |
| Renewal date: | 1 April 2007 |
| Valid until: | 1 April 2009 |


## Bioline *Salmonella* Optima **- a renewed NordVal approval**.

Børkop, Denmark, produces Bioline *Salmonella* Optima. Bioline has received a renewed NordVal approval for Bioline *Salmonella* Optima for the detection of *Salmonella* in foods and feeding stuffs. The principle for Bioline *Salmonella* Optima is a 2-step enrichment, about 40 hours, and detection by Bioline *Salmonella* ELISA Test kit, Cat.no. 0096-1 (1-plate version) and Bioline *Salmonella* ELISA kit, Cat.no. 0096-5 (5-plate version).

The method is validated according to NordVal's validation protocol and ISO 16140 against the reference methods ISO 6579:2002 and NMKL Method No. 71 for the detection of *Salmonella* in foods and feeds. There were no statistical differences in the results obtained by the methods, and hence the methods may be considered equivalent.

Method characterists for **Bioline Salmonella Optima:**

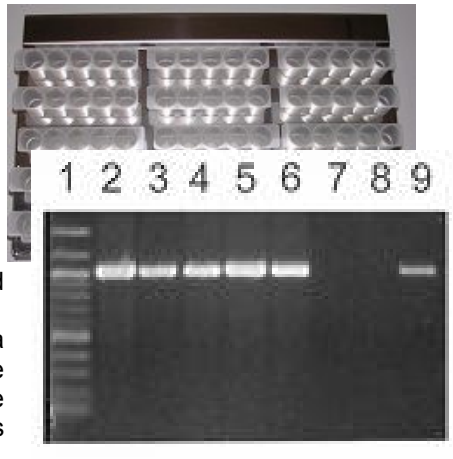
- **Relative accuracy: 98.4%** - Expresses the degree of correspondence between the response obtained by two different methods, replicates or the obtained versus the expected results.
- **Limit of detection: 1-10 cfu / 25 g. -** The lowest amount or concentration of the analyte in a sample, which can be reliably detected (but not necessarily quantified).
- **Relative sensitivity: 96.7%** - Expresses the number of obtained positive results, that are expected to be positive, divided by the total number of expected positive results.
- **Relative specificity: 100%** - Expresses the number of obtained negative results, that are expected to be negative, divided by the total number of expected negative results

For further information regarding Bioline *Salmonella* Optima, please visit: http://www.bioline.dk.

| | |
|---|---|
| Issued for: | ***Campylobacter* real-time PCR** |
| NordVal No.: | 017 |
| First approval date: | 31 June 2005 |
| Renewal date: | 1 April 2007 |
| Valid until: | 1 April 2009 |

## *Campylobacter* real-time PCR **a renewed NordVal approval**.

Lantmännen Analycen AB, Fredericia, Denmark, has received a renewal of the NordVal approval for *Campylobacter* real-time PCR for the detection of thermotolerante *Campylobacters* (*C. jejuni, C. coli* and *C. lari)* in raw chicken meat, and cloacae swabs and faecal samples collected on disposable shoe covers in rearing houses.




The principle of the method is as follows:

1. Raw chicken meat is homogenised and enriched overnight
2. Cloacae swabs are collected in a tube with 3 ml 0,9% NaCl
3. Disposable shoe covers are weighed, washed ten times in 0.9% NaCl and homogenised.

The sample preparation step is automated using magnetic beads and performed on a Thermo Labsystem KingFisher, Dynal Bead Retriever or equivalent equipment. The real time PCR is performed on a part of the prepared volume. The primers are targeting a *C. jejuni* 16S rRNA sequence. An internal amplification control (IAC) is analysed with the samples to detect false negative responses.

The method is qualitative with a limit of detection of 1-10 cfu/ 25 g for raw chicken meat, and 100-1000 cfu/ml for dilutions of cloacae swabs and faecal samples collected from disposable shoe covers. The method for chicken meat is tested against ISO 10272-1 and NMKL Method No. 119. There were no statistical differences in the results of the methods, and hence the methods may be considered as equivalent. For faecal samples, no official method or standard is available. The PCR method is used as a routine method for cloacae swabs in *Campylobacter* surveillance programs in Denmark.

The method can easily be implemented at laboratories with experience with PCR. There are no enrichment steps for the analysis of clacae swabs or faecal samples collected from disposable shoe covers, and hence the number of potential pathogens are kept at low levels in the materials tested. The disadvantage of the method is that only the described Polymerase (500 U Tth) from Roche ® can be used in order to get acceptable results.

The validation of the method is carried out by the National Food Institute of the Technical University of Denmark. The results of the validation are given in the following publications:

- Josefsen M.H., N.R. Jacobsen, J. Hoorfar. 2004. Enrichment Followed by Quantitative PCR for Rapid Detection and as a Tool for Quantitative Risk Assessment of Food-Borne Thermo tolerant Campylobactors. *J Appl and Env Microbiol.* 70:3588-3592.
- Lübeck P.S., P. Wolffs, S.L.W. On, P. Ahrens, P. Rådström, J. Hoorfar. 2003. Toward an International Standard for PCR-Based Detection of Food-Borne Thermotolerant Campylobacters: Assay Development and Analytical Validation. *J Appl and Env Microbiol.* Sept. 2003, p. 5664-5669.
- Lübeck P.S., N. Cook, M. Wagner, P. Fach, J. Hoorfar. 2003. Toward an International Standard for PCR-Based Detection of Food-Borne Thermo tolerant Campylobacters: Validation in a Multicenter Collaborative Trial. *J Appl and Env Microbiol.* Sept. 2003, p. 5670-5672.

| | |
|---|---|
| Issued for: | iQ-Check *Salmonella* |
| NordVal No.: | 007 |
| First approval date: | 28 January 2005 |
| Renewal date: | 1 April 2007 |
| Valid until: | 1 April 2009 |


## iQ-Check *Salmonella* - a renewed NordVal approval.

Bio-Rad Laboratories SA, Food Science Division, Marnes-la-Coquette, France, is the producer of the iQ Check *Salmonella* Kit.

The method consists of

- Enrichment according to NMKL Method No. 71 and ISO 6959 (25 g sample in 225 ml BPW).
- Concentration of cells by centrifugation of the enriched culture. Lysis of the bacteria cells and DNA extraction with a lysis reagent and thermal treatment.
- Amplification and detection of target DNA with real-time PCR.

The method is tested against ISO 6579:2002 for detection of *Salmonella spp.* in foods, feeds and environmental samples. AFNOR has approved the kit. NordVal has also reviewed the collaborative study of iQ–Check *Salmonella,* and found the study to be in accordance with the NordVal protocol, and that the results are in agreement with Bio-Rad's declarations for the method.

iQ-Check *Salmonella* kits are complete amplification and detection kits including all the reagents for the sample preparation:

- Lysis reagent, for DNA extraction
- Molecular beacon fluorescent probes
- PCR amplification mix, including internal inhibition control
- Positive PCR control
- Negative PCR control

*From www.bio-rad.com*

## NORDIC COURSES IN SENSORY EVALUATION OF DRINKING WATER

In cooperation with the Norwegian Institute for Food and Environmental Analysis (Norsk Matanalyse), NMKL is planning to arrange courses in sensory evaluation of drinking water. The courses will be held in Nordic countries in November 2007.
The courses will be based on

- *NMKL Method No. 183, 2005:* ***Sensory quality control test for drinking water*** *and*
- *NMKL Procedure No. 11, 2002:* ***Procedure for sensory analysis of drinking water / Juomaveden aistinvarainen arviointi***

The target group for these courses is personnel working within water supply and in other places where there is a need for a fast, simple and objective sensorial control of the drinking water. The courses will include sensorial theory of relevance for the target group, a thorough description of the method and a lot of practical assessments of drinking water. Those interested are requested to make a note of the courses. NMKL will issue further details regarding the course on its home page, and the course will be announced in the next issue of the NMKL Newsletter.

## AVAILABLE NMKL PROCEDURES

| | |
|---|---|
| No. 1, 2nd 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, 2nd Ed., 2005 | Validation of chemical analytical methods. |
| No. 5, 2nd Ed., 2003 | Estimation and expression of measurement uncertainty in chemical analysis. |
| No. 6, 1998 | Yleiset ohjeet aistinvaraisten laboratorioiden laadunvarmistukseen. (Not available in English). |
| No. 7, 1998 | Checking of UV/VIS spectrophotometers. |
| No. 8, 2nd Ed., 2002 | Measurement uncertainty in microbiological examination of foods. |
| No. 9, 2001 | Evaluation of results derived from the analysis of certified reference materials. |
| No. 10, 2001 | Control of Microbiological Media. |
| No. 11, 2002 | Procedure for sensory analysis of drinking water/ Juomaveden aistinvarainen arviointi. |
| 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 Packaging Materials. |
| No. 20, 2007 | Evaluation of results from qualitative methods. |

**If methods are not received, please contact the secretariat to make sure that the payment has gone through.**

**User ID and password for the NMKL online subscription will be forwarded as soon as the payment is registered.**

### NMKL'S PRICES FOR 2007:

- Online subscription, a complete method collection with continuous updates, for existing subscribers: NOK 3 000 for 1-3 users.
- New subscription for online method collection: NOK 5 000
- Annual hard copy subscription: NOK 2 000
- Annual electronic subscription via e-mail: NOK 1 500
- Single NMKL methods: NOK 400
- Single NMKL procedures (guidelines): NOK 300