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Many thanks to the outgoing Chair Ulla Edberg, National Food Agency, for outstanding and active management, - with an always engaging, steady and unwavering belief in the Nordic cooperation. Thanks for your time, your thoughtfulness and warmth, for your academic excellence and for your ambitious, forward-looking and inspiring work.

NEW NMKL METHOD

HISTAMINE. HPLC DETERMINATION WITH POST-COLUMN DERIVATIZATION AND FLUORESCENCE DETECTION IN FISH AND FISH PRODUCTS (NMKL 200, 2015)

Histamine is formed by microbial decarboxylation of histidine, an essential amino acid found in all fish, and especially in mackerel, herring, anchovy and tuna (Scomberiscida- and Scombridae families). Histamine can cause Scombroid poisoning, similar to allergic reactions.

In this method, histamine is extracted from fish by homogenization with 0.6 M PCA (perchloric acid). The extract is measured using liquid chromatography with OPA (o-phthaldialdehyde) as derivatization reagent followed by fluorescence detection. The method uses an internal standard for the calculation, which reduces the contributions to the measurement uncertainty, especially as the internal standard solution is added before the extraction. The method describes post-column derivatization, which reduces potential problems with unstable OPA derivatives.

The method is intended for the quantification of histamine in fish down to 2 mg/kg, which was determined to be a reasonable limit of quantification. Recovery studies were carried out for histamine in tuna, mackerel and herring. The results showed that the recovery of histamine is satisfactory (97.7 to 102%). Additional method performance characteristics examined were selectivity, linearity, precision, accuracy, robustness and measurement uncertainty. The internal validation studies showed that the method is fit for the purpose.

The validations of the method were carried out by Gunnhild Hovde (Scientist), Bente Asbjørnsen (Senior Engineer) and Jarle Wang-Andersen (Manager) at Nofima BioLab in Bergen.

Nofima AS is one of Europe's largest industry-oriented research institute that conducts research and development for the food industry, aquaculture and fisheries. The headquarters are located in Tromsø, with research activities being performed in locations in Bergen, Stavanger, Sunndalsøra, Tromsø, Ås and Alta. The Institute has about 350 employees.

BioLab in Bergen is Nofima's accredited commissioning and research laboratory, offering analyzes in chemistry, microbiology and physical measurements.

About 50,000 analyzes are performed annually for Norwegian and foreign businesses.

BioLab's main area of expertise is in marine raw materials and products, and hence the laboratory can offer additional support and product knowledge beyond what is provided by regular commercial laboratories.

The employees have extensive knowledge of raw materials, process development and products used in marine and vegetable ingredients for feed and fish farming, and for human use. BioLab also conducts various projects such as development of new analytical methods, chemical and microbiological quality documentation and assistance in interpretation of regulations. The quality system is based on requirements standard ISO 17025, and the laboratory is accredited by Norwegian Accreditation.



From left :

Bente Asbjørnsen, Jarle Wang-Andersen and Gunnhild Hovde

NEW NMKL PROCEDURE

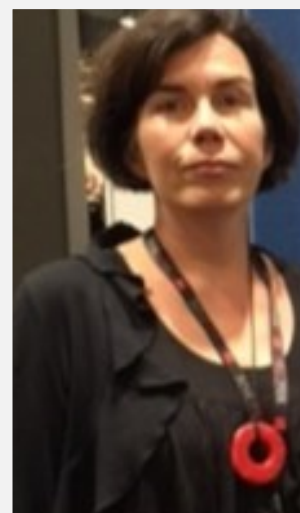
GUIDELINES FOR SENSORY EVALUATION OF BREAD (NMKL PROCEDURE NO. 31, 2015)

COMING SOON

Bread plays a key role in the Nordic kitchen and daily diet. The variety of bread consumed in the Nordic countries is wide.

A new NMKL guide focusing on sensory evaluation of bread will soon be published. The procedure describes the main steps of the protocol to be applied in analytical sensory evaluation of bread. The procedure may serve as a guideline for everyone, but especially for bakeries and in the education of staff in bread making.

The guide has been written in close collaboration between University of Turku (Finland), University of Uppsala (Sweden) and Nofima As (Norway). Key authors are: Mari Sandell (FI), Saara Lundén (FI), Hilikka Terho (FI), Iwona Kihlberg (SE) and Mars Carlehög (NO). In addition, the guideline has been reviewed and commented by NMKL members of Subcommittee 4 – Sensory Analysis.



Mari Sandell (Ph.D.), Head of Sensory Laboratory, Deputy Director and Board Member of Functional Foods Forum (University of Turku, Faculty of Medicine).

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REFERENCE



The “Senses and food” laboratory conducts research on the senses and multisensory perception. Her department focus their research efforts on individual differences in sensory perception of foods and eating behaviour, both with children and adults. Our research on underlying genetic and learned factors aims to support food development and food education.

<https://www.utu.fi/en/units/fff/research/senses/Pages/senses.aspx>

NEW NMKL PROCEDURE

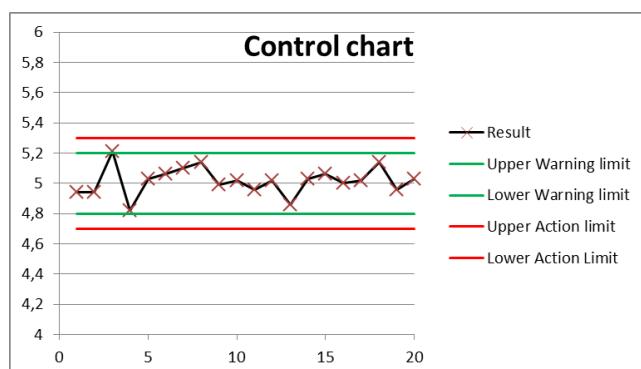
CONTROL CHARTS AND CONTROL MATERIALS IN INTERNAL QUALITY

CONTROL IN FOOD CHEMICAL LABORATORIES (NMKL PROCEDURE NO. 3, 2015)

COMING SOON

Control charts are essential in the internal control in laboratories, and to meet the requirements of ISO / IEC 17025 in connection with detection of trends. Data from control charts can also be used in the estimation of measurement uncertainty.

The most commonly used control chart is obtained by repeated measurements of a control material over time, where the results are plotted on the vertical axis against the code of the analysis (e.g. the date) on the horizontal axis. The control material can be a certified reference material, another reference material, or an internally prepared control material. Ordinary control charts contains horizontal lines; a line for the true / accepted value and lines for the upper and lower warning and action limits, as shown below.



The procedure describes how control charts are constructed and interpreted, and the required properties of a control material.

The first version of this procedure was published in 1999 and was elaborated under the lead of Mogens Bergstrøm-Nielsen, Denmark. The procedure is revised in a project group consisting of Dag Grønningen (NO), Ole Danielsen (DK), Kati Hakala (FI), Heida Palmadottir (IS) and Joakim Engman (SE).

The revision is of technical character, as the procedure now refers to the requirements of the accreditation standard ISO / IEC 17025. Further, the interpretations of control charts are harmonized with the Nordtest's "Internal Quality Control" (Trollboken).

The English version of the Procedure will be available in December 2015, and the Norwegian edition will be published in February 2016.



Dag Grønningen, Norwegian Veterinary Institute (NVI). Grønningen is the Chair of the Norwegian National Committee of NMKL. At the Veterinary Institute, his duties are amongst others within quality assurance.

NVI is a biomedical research institute and the country's leading centre of expertise on biosafety in fish and animals. The institute aims to be Norway's emergency response centre for One Health.

The main roles of NVI are emergency/preparedness, research and development in order to prevent health threats to fish, animals and humans. The core activities of NVI are diagnostics, research, innovation, monitoring, risk assessment, counselling and dissemination. NVI is a national reference laboratory and has extensive international cooperation.



NMKL course

SAMPLING

- ◇ 19 - 20 November 2015
at the Finnish Food Safety Authority Evira + video conferences to various locations. The course will be held in Finnish. For program, click on the button.
- ◇ 2 - 3 December 2015
at the Norwegian Veterinary Institute in Oslo with video conference to Matis, Reykjavik and to the Faroese Food and Veterinary Authority, Tórshavn. The course will be held in Norwegian. For program, click on the button.



PRICE LIST NMKL PUBLICATIONS

Online subscription (access to the publications at any time) for 1-3 users per lab unit:

- NMKL Methods: NOK 2500 / EUR 300 (First-time access to the compiled collection: NOK 5000 / EUR 600)
- NMKL Procedures: NOK 1500 / EUR 200 (First-time access to the compiled collection: NOK 4000 / EUR 500)
- NMKL Methods + NMKL Procedures: NOK 3500 / EUR 400
(First-time access to the compiled collections: NOK 8000 / EUR 1000)

PDF subscription (publications forwarded by e-mail) for 1-3 users per lab unit:

- NMKL Methods: NOK 2500 / EUR 300

Single copies:

- NMKL Methods: NOK 500 / EUR 60
- NMKL Procedures: NOK 400 / EUR 50 (≤ 30 pages) and NOK 600 / EUR 70 (> 30 pages)

Other publications are free.

Fee per invoice / order: NOK 50, -

Discounts

- For educational purposes; 25% discount.

Publications may be ordered on NMKL's Web page or by e-mail to nmkl@vetinst.no

69TH NMKL ANNUAL MEETING

The 69th NMKL Annual Meeting was held at Nyborg Strand Hotel & Conference Centre, Denmark, 28 - 31 August 2015.

The Chair of NMKL Ulla Edberg opened the meeting by emphasizing that NMKL is a modern, well-run and in-time organization. Through strategic choices NMKL has always been up to date. This is also reflected in the new long-term plan (given on page 6). *During the meeting, Ulla Edberg was thanked for her longstanding commitment and efforts in NMKL; 6 years as the Chairperson of NMKL, 25 years as the Chairperson of the Swedish National Committee and 30 years as an appointed member.*

Every year, a referee is invited to the annual meeting to present his/her work. This year, Saija Hallanvuo was asked to present the validation studies of *Yersinia enterocolitica*, a comprehensive work carried out with financial support from the EU (CEN Mandate M381 of December 2010). This work will result in a revised ISO 10273, as well as a new NMKL method in 2016.

The participants at the NMKL Annual Meeting represent Nordic food laboratories, food industry, food authorities and research institutions. The members of NMKL are appointed experts, and the activities of the organization depend on their commitment and ability to contribute actively to the cooperation. A great number of the members have been involved for many years.

Some keywords for ongoing projects are given below.

Sub Committee 2: Microbiology

- Colony counts on blood agar
- *Salmonella* using MSRV
- *Yersinia enterocolitica*
- *Yersinia pseudotuberculosis*
- *Shigella*
- *Clostridium difficile*
- *Escherichia coli* O157
- Quality control of PCR assays
- Verification of methods
- Control of culture media

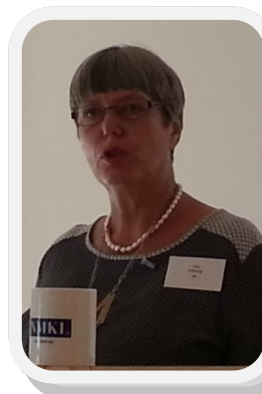
Sub committee 3: Chemistry

- Methyl Mercury
- Inorganic Arsenic
- Folate
- Phospholipids
- Calibration of NIR and IR
- Control charts

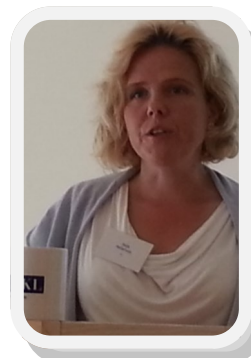
Sub committee 4:

Sensory Analysis

- Methodology for binomial tests
- Sensory evaluation of marine oils
- Sensory evaluation of Nordic berries



*The Chair of NMKL
Dr. Ulla Edberg,
National Food
Agency, Sweden*



*The referee of the
year: Dr. Saija Hal-
lanvuo, Evira*



*An token of appreciation was given to Ulf Bondesson,
Charlotta Engdahl Axelsson and Gro S. Johannessen for
10 year membership*

CONT. 69TH NMKL ANNUAL MEETING



Microbiological committee. Chair: Franklin Georgsson, Matis, Iceland
Secretary: Gro S. Johannessen, Norwegian Veterinary Institute



Chemical committee. Chair: Tuija Pihlström, National Food Agency, Sweden
Secretary: Ulf Bondesson, National Veterinary Institute, Sweden



Sensory committee. Chair: Grethe Hyldig, DTU Food, National Food Institute, Denmark. Secretary: Per Lea, Nofima Ås, Norway



The Danish National Committee invited us on an field trip, and the obvious choice was a Bison farm.



Franklin Georgsson, Matis, Iceland, took over the presidency after Ulla Edberg, National Food Agency, Sweden.

The Annual Meeting adopted the following Long-Term Plan for 2016-2019:

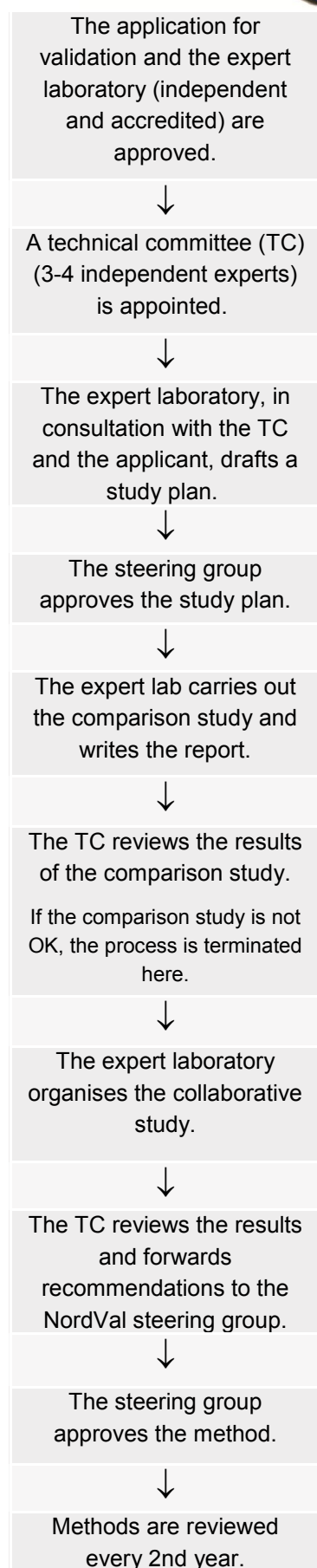
NMKL will work to:

- be the most professionally relevant Nordic network / collaboration forum for researchers and analysts in food methodology
- keep an overview of contacts in NRLs in the Nordic countries and in the EURLs
- promote the use of new analytical techniques
- be efficient, but thorough, innovative and knowledge-based
- prepare relevant, well-documented, chemical, microbiological and sensory analytical methods, which meet Nordic and international guidelines
- evaluate and certify alternative methods for food, feed, water and environmental samples in NordVal International
- elaborate guides for laboratories and users of analytical results
- arrange Nordic and international courses, workshops, seminars and symposiums
- use digital solutions, ensuring efficiency and quality, in information, publishing / distribution of NMKL publications and in documentation exchange in project collaborations
- cooperate with relevant international organizations to better solve problems and to help others in reaching their goals
- promote Nordic interests internationally within the competence areas of NMKL
- strengthen the Nordic sense of community and cooperative culture

NORDVAL INTERNATIONAL



Myths about NordVal International	True	False
Steering group members can not be involved in the production and/or distribution of test kits.	✓	
The reference method has to be a NMKL method.		✓
NordVal International Certificates apply only in the Nordic countries.		✓
Nordic experts review the results.	✓	
Only Nordic laboratories are used in the validations.		✓
The protocol of NordVal International does not comply with ISO 16140.		✓
NordVal International cooperates with other international organisations .	✓	
The process in NordVal International is fast.	✓	



RENEWED NORDVAL INTERNATIONAL CERTIFICATES

NordVal 001: TRANSIA™ PLATE *Salmonella* Gold, [\(link to certificate here\)](#)

TRANSIA™ PLATE *Salmonella* Gold, from BioControl System Inc. is based on a three-step, sandwich-type ELISA using:

- a microtitre plate with divisible strips coated with antibodies specific to *Salmonella*
- and ready-to use reagents.

The method is tested on foods, feeds and environmental samples.

TRANSIA™ PLATE *Salmonella* Gold was first approved in 2001. Since then the method has been modified. The modifications have been validated, and the results satisfy the requirements; i.e. there are no statistical significant differences in the results obtained with TRANSIA™ PLATE *Salmonella* Gold and the reference method (EN ISO 6579).



RENEWED NORDVAL INTERNATIONAL CERTIFICATES



NordVal 039: BAX[®] System Real-Time PCR Assay ([link to certificate here](#))

BAX[®] Q7 *Campylobacter jejuni, coli* and *lari* are distributed by DuPont Nutrition & Health and Thermo Fisher Scientific. NordVal International has approved the method for the detection and enumeration in poultry faeces.

The method

- detects and quantifies all three species in the same sample
- takes less than 90 minutes in processing time
- provides results the same day for highly contaminated samples
- has a detection level of 100 cfu/g
- has a satisfactory sensitivity and selectivity



There is no statistical significant difference between the results obtained with Bax Q7 and the reference method (EN ISO:10272-1:2006).

NordVal 045: HyServe Compact Dry X-BC Method for the enumeration of *Bacillus cereus* in foods ([link to certificate here](#))

Compact Dry X-BC method contains a ready-to-use dry chromogenic medium, and selective agents for the detection and enumeration of *Bacillus cereus*. An aliquot of 1 ml of an appropriate dilution is plated onto a Compact Dry X-BC plate. The incubation conditions tested with satisfactory results in the study, were $30 \pm 1^\circ\text{C}$ for $48 \pm 2\text{h}$. *Bacillus cereus* forms light blue/blue colonies.



The method is tested in extensive method validations on foods, and compared against the reference method EN ISO 7932:2004. The results with the alternative method were consistently lower than those obtained by the reference method, however, the differences were not statistically significant.

NordVal 041: *Salmonella* Detection Method by Real-time PCR, ([link to certificate here](#))

This method from Technology Institute DMRI, Denmark was announced in June 2015. In the certificate of June 2015, the results for poultry faeces had been omitted by mistake. A new certificate has therefore been issued.

Available NMKL Procedures

- No 1, 2. Ed. 2005 Calibration and performance checking of laboratory balances
- 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, (Adm 2002, Adm 2006) Generelle retningslinier for kvalitetssikring af sensoriske laboratorier. (only available in Danish and 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, 2. Ed., 2014 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 16, 2005 (2007) 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
- No 24, 2010 Guidelines for quality assurance for food chemical laboratories
- No 25, 2014 Recovery information in analytical measurement
- No 26, 2012 Control and internal calibration of thermometers and temperature control on microbiological laboratories
- No 27, 2013 Measurement uncertainty in sensory analysis
- No 28, 2014 Guidelines for reporting sensory data
- No 29, 2014 Guidelines for sensory analysis of meat and meat products
- No 30, 2014 Statistical evaluation of results from quantitative microbiological methods