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Project Plan for the CEN or CENELEC Workshop 83 on comminuted and/or fragmented poultry meat

1. Status of the Project Plan

Draft Project Plan to be approved at the Kick-off meeting of the Workshop

2. Background to the Workshop

As an example of comminuted or fragmented meat MSM is not considered as meat under current European legislation and if used for human consumption it should be included in the list of ingredients with a specific name. As, however, there are currently no European Standards available by which level of degradation of muscle tissue can be measured which is a prerequisite for quantification of loss or modification of muscle fibre structure this has implied that all MSM in the strict sense of the legal text is not to be considered as meat. It is consequently downgraded and with very limited and strictly regulated use for human consumption.

As the development of machinery for mechanical separation of meat has now reached a state where the product cannot be distinguished in important quality traits from regular minced meat there are no longer any objective reasons for down grading the product just exclusively on the way it was produced. This has also implied that the Regulation now is interpreted and implemented rather differently in individual member states and this means competition on uneven conditions. This was documented in a series of audit reports on implementation and interpretation of present legislation in a number of member states. The conclusion on these reports made the Commission ask EFSA for a scientific opinion, which was issued in December 2013. The opinion concluded that “Microscopic examination of tissue structure changes is a promising method for distinction between different types of MSM, minced meat and meat preparation preparations, but further validation is needed because the available data do not provide objective threshold values. .

This situation was actually foreseen by the European Parliament and the Council of the European Union who in the point 20 of the Preambule to the Reg (EC) 853/2004 actually express a wish on the definition of MSM. It is stated that “the definition of Mechanically Separated Meat should be a generic one covering all methods of mechanical separation. Rapid technological developments in this area mean that a flexible definition is appropriate. The technical requirements for MSM should differ, however, depending on a risk assessment of the product resulting from different methods”.

[1] *Here the date of updating should go, updated by the last editor*

This is exactly where we are today. In 2014 a project under the European Union's Seventh Framework Programme started with the title "Development of an objective method to perform quality classification of comminuted poultry meat" (MACSYS) involving nine partners, including research institutions and companies from six EU countries. The objectives of the MACSYS project are the following:

1) To test three different methods (an English, a German and a Danish method), for accuracy and objectivity in quantifying level of degradation of muscle tissue in samples from poultry

2) To develop an automated image analysis system for the histochemical analysis.

3) To develop an analysis protocol that includes taking samples, handling samples, cutting samples, staining samples and analysing samples.

4) To measure additional biochemical compounds and minerals in a wide variety of samples taken at slaughter houses in Denmark.

5) Develop sensors and mathematical models that allows for monitoring level of degradation of muscle structure and additional quality traits on- or ad-line at the production sites.

6) To implement a formal accreditation process framework to have such a verification procedure properly acknowledged as technical specification across the EU

7) To promote the initiative among the producers, manufacturers and consumers.

Market relevance

A collective estimate of the annual turnover of poultry meat and poultry products enterprises amounts to 100 billion euros and a production of over 11 million tonnes of poultry meat a year is represented by countries involved in the MACSYS consortium. European meat production is driven by increasing consumer demand for poultry and pig meat. Particularly poultry meat consumption will increase and it is expected to increase by 6% from 2009-2020.

Specifically in the poultry market the poultry meat products MSM accounts for about 400.000 tonnes a year. When specified the high pressure MSM represents 75% and the low pressure MSM 25%. From current prices it can be calculated that the MSM production has an approximate annual turnover between 150 and 280 million Euros. The annual turnover may actually be as high as 450 million Euros if the 230 tonnes of MSM, for which the origin was not indicated, is poultry MSM.

It is however worth mentioning that the "theoretical" or "reference" value might be more than the double this above estimate, when we consider that nowadays a substantial share of the meat from carcasses and parts is actually "lost" from usage in human consumption i.e. it is currently redirected to pet food and rendering processes, due to the poor economics of low MSM prices.

MACSYS results will have an impact on nearly all actors in the poultry industry sector from food regulatory authorities to meat processing industries by improving the overall economies through a novel practise of comminuted poultry meat quality classification**.**

MACSYS will provide EURL´s and NRL´s with an innovative tool to assess comminuted meat quality in a fast an objective way., which, has the potential to become a reference method to objectively classify comminuted meat in the EU.

In predictions of the market developments it is expected that EU will gradually loose its net export status. The results of the MACSYS project may provide the industry with additional tools that will allow for an extreme focus on quality. Eventually this will enhance competitiveness of the industry, thereby reducing the demand for import of lower quality products from countries where in addition neither food safety nor animal welfare is of any importance.

Meat processing equipment is forecasted to benefit from new EU legislation concerning improved food safety and quality. This drive on the EU market for industrial meat and poultry processing equipment are expected to force manufactures to either change or update current equipment so as to comply with the highest meat quality standards. Results from the MACSYS project will contribute to this driving force.

Furthermore the results of the MACSYS project will generally enhance the sustainability of poultry meat production first and foremost within the EU, by substantially reducing waste of potentially acceptable poultry meat.

European Legal Environment

The list below includes a non-exhaustive list of the most relevant regulations for the MACSYS project and the CWA process. Other national rules may be in place.

- Reg (EC) 178/2002. On general food laws.
- Reg (EC) 852/2004. General requirements, hygiene, HACCP.
- Reg (EC) 853/2004. Specific requirements to products of animal origin.
- Reg (EC) 2073/2005. Microbiological criteria.
- Reg (EC) 931/2011. Traceability of products of animal origin.
- Reg (EC) 999/2001. TSE (Transmissible spongiformis encephalitis) restrictions and import regulations.
- Reg (EC) 882/2002. Official controls of food and feed.
- Reg (EC) 854/2004. Official controls of products of animal origin

- Reg (EC) 1169/2011 Provision of food information to consumers

According to the definition given in Reg (EC) 853/2004, annex 1, mechanically separated meat or “MSM” means the product obtained by removing meat from flesh-bearing bones after boning or from poultry carcasses using mechanical means resulting in the loss or modification of the muscle fibre structure. As interpreted by the European court of justice flesh bearing bones are materials from which the intact muscles have already been detached, or poultry carcasses, to which meat remains attached (case C-453/13 16 October 2014).

Existing standards and standard related activities and documents.

Currently no official European standard exists in the area of MSM.

In 2010 a method to quantify the loss or the modification of the muscle fibre structure in a meat raw material has been accepted as a CEN Workshop Agreement: CWA 16255:2010 "Meat raw materials obtained by deboning – Assessment of the muscle fibre structure – pork, poultry and rabbit").

Motivation for CWA 83 "Comminuted and/or fragmented poultry meat"

The motivation for the creation of this Workshop is dissemination of the results of the research and development project “MACSYS”, supported by the European Union’s Seventh Framework Programme. The intentions are future validation of the analyses and their use in all individual member states, in order to support the very large market on poultry meat in EU on uniform conditions, and to support an environmental as well as economical sustainable development in the poultry meat industry focusing on production of high quality products rather than production methods.

3. Workshop proposers and Workshop participants

The workshop proposers are the MACSYS consortium.

AU. Aarhus University, Department of Food Science. The department possesses specific knowledge on the topic of meat quality, specific knowledge and experience in quality of MSM products and image analysis of muscle tissue. The group of muscle physiology and meat quality, within the Department of Food Science has primarily worked with the dependency of the physiological state of muscles and how this is influenced by genetic and environmental factors and the effect of this broad spectrum of meat quality traits. Within the last ten years the group has been involved in research on mechanically separated meat with particular focus on the development of methods to differentiate these products based on quality parameters. The group has previously developed an image analysis system for measuring characteristics of individual muscle fibre types, which is also used in research in medicine and exercise physiology.

KU, University of Copenhagen, The research group, Quality & Technology at KU (Q&T), which will be part of this project, is situated at the Department of Food Science, Faculty of Life Sciences. Q&T was established in 1991 and focuses on the application of optical spectroscopy

and nuclear magnetic resonance mainly on plant and food products. These data are handled by chemometrics and advanced data analysis tools in order to extract the maximum amount of information. The research group is specialised in non-destructive food analysis by spectroscopic screening methods and world-leading in applying and developing chemometrics and advanced data analysis.

LEATHERHEAD FOOD RESEARCH (LFR), based near London, UK, is an independent organisation delivering innovative research, scientific consultancy and regulatory guidance and interpretation. Fundamentally a membership-based organisation, our unique portfolio of products has attracted over 1000 companies worldwide. They represent a who's who of the global food industry, ranging from large multi-nationals to small and medium-sized companies. LFR's

industry-leading scientific, regulatory and market research capabilities create a unique combination of food industry acumen and scientific expertise. LFR offer clients practical advice, tailored consultancy, research and business-oriented support closely aligned to both their strategic and everyday demands. Specifically, LFR has much experience and good reputation in the study of the microstructure of food generally and meat in particular. LFR is also acknowledged as expert in the development of genetic markers, assays and specialist chemical analyses for food.

MRI, the Federal Research Institute of Nutrition and Food in Germany, was founded in 2008. It is granted the status of a federal high authority and is one of the four federal research institutes under the auspices of the Federal Ministry of Food, Agriculture and Consumer Protection (BMELV). Main research activities focus on assessment of bioactive food constituents and their health effects, investigation of gentle and sustainable procedures for processing, quality assurance of vegetable and animal food as well as analysis of nutritional behaviour of certain population groups and the improvement and enhancement of consumers' competence. MRI's Department of Safety and Quality of Meat holds relevant experience for the MACSYS project within muscle histology, detection methods of MSM, and meat quality.

CAROMETEC (CMT) Food Technology is a Danish SME with roots back to 1931 where the company established a separate cooperative in line with the traditional organizational model of Danish agriculture. Ever since CFT has experienced changes in the organizational structure and profile. Today the company is highly specialized and is positioned as the world leader in development of grading equipment, tracking systems and quality control instruments for the pig and beef industry.

ROBERT DAMKJAER (RBD) is a family-owned company in Denmark within sausage manufacturing dating back to 1960. The business lies in the production of chicken luncheons and canned as well as chilled sausages. RBD produce approximately 200 tons per week of which 80 % are exported to more than 50 countries. RBD buys all meat for its production from slaughter houses and is therefore strongly interested in a uniform interpretation applicable to comminuted meat in EU. RBD has already been engaged in two Danish projects focused on quality assessment of mechanically and manually recovered meat and related methodologies, which are forerunners for the MACSYS Project.

SOFTWARE FOR CRITICAL SYSTEMS – SoftCritcS (SCS) is a technological company created to exploit the results of different European projects coordinated by the University of Malaga and to apply other research results developing software solutions and products. SCS has a long experience in the development of image analysis tools for the industrial domain.

LIMA S.A.S. is specialized in the design, manufacturing and sales of meat bones separators, deboners and desinewers, corresponding to the highest quality standards. Thanks to dynamism in innovation, a complete range of machines has been developed. Based on his technological expertise and experience, LIMA offers also complete production lines. A team of representatives and associated companies markets and services the separators, in more than 100 countries on 5 continents.

MAREL (MA) is a leading provider of advanced equipment, systems and services to the fish, meat, poultry and further processing industries. The company is a global leader in developing and manufacturing integrated systems for the fish, poultry and further processing industry segments, and a major provider for the meat industry. The product range spans from harvesting raw materials to packaging the final product – from standardized stand-alone units to all-inclusive integrated turnkey systems. The strong research and development strategy of MA is supported by an annual investment of 6-7% of revenue in innovation, which is above the average expenditure of competitors in the field. Highly qualified researchers and technicians, a great working relationship with leaders in the food processing industry and a pioneering mindset contribute to the company's successful product development that has kept it at the forefront of the industry during the last decades.

The Workshop participation will be open to all interested parties

4. Workshop scope and objectives

The aim of the Workshop is to develop a CWA on the technical requirements and methods to classify objectively the level of degradation of muscle structure in comminuted and/or fragmented poultry meat. This method can be used for quantification of level of degradation of muscle tissue as a prerequisite for grading comminuted and/or fragmented poultry meat in order to support legislation.

The CEN/CENELEC Workshop Agreement is the proposed approach due to the following advantages:

- Agility: The time frames for the other standardization options do not match the planned schedule for this project.
- The Workshop Agreement provides the sought acknowledge of the industry across the EU by submitting the technical specification to the workshop process providing openness in process and visibility to all market players.
- The Workshop Agreement assures the involvement of the industry (conformity assessment organizations like laboratories, component and terminal manufacturers, integrators, application developers) as the workshop is open to anyone, including non-European participants. The

opportunity to participate is widely advertised in advance by CEN/CENELEC and its member bodies.
- The Workshop Agreement guarantees that the different views of the stakeholders interested in the standard are taken into account.

- The Workshop Agreement ensures availability of information to all parties, enquiry among participants, involvement of CEN/CENELEC members during acceptance, and in summary an fully open and transparent process.

- The Workshop Agreement will be published and openly available on the CEN website.

5. Workshop programme

The kick-off meeting and 1st plenary meeting will be held on 1 and 2 March 2016. During the Workshop lifetime, as many meetings as necessary will be held, depending of the project evolution.

Draft of project plan to be decided at the Kick-off meeting

- Announcement of the Project plan on the CEN website
- Deciding the date and location of Kick-off meeting
- Kick-off meeting with agreement on project plan, CWA secretariat and CWA chairman as well as workshop participants
- In conjunction with the Kick-off meeting the 1st workshop meeting will be held with a presentation for a draft text of the CWA
- 2nd workshop meeting adjusting the CWA text held as a virtual meeting on April 13th, 2016
- 3rd and final workshop meeting with an approval of the CWA text on May 26th, 2016

Work already delivered:

Peer-reviewed articles:

Henckel, P., Therkildsen, M., Raudsepp, P., Brüggemann, D. & Groves, K. (2015): Mechanically separated “meat”. World´s Poultry Science Journal, **71** (Supp. 1), 90

Conference proceedings and abstracts:

Christensen, M., Brüggemann, D., Raudsepp, P., Groves, K., Burch, R., Henckel, P., Soler, E., Schmidt Andersen, M., Le Guillou, D., Warming, J., van der Steen, F. & Therkildsen, M. (2015): Development of an objective method to perform quality classification of comminuted poultry

meat. 61st International Congress of Meat Science and Technology (ICoMST), Clermont Ferrand, France, August 24th-28th 2015

Henckel, P., Therkildsen, M., Raudsepp, P., Brüggemann, D. & Groves, K. (2015): Mechanically separated "meat". XXII European Symposium on the Quality of Poultry Meat, Nantes, France, May 11th-13th 2015. Abstract M8-01. p. 90

Raudsepp, P., Henckel, P., Groves, K., Therkildsen, M. & Brüggemann, D. (2015): Reliability of different histological methods for estimation of muscle fiber structure in MSM. 61st International

Congress of Meat Science and Technology (ICoMST), Clermont Ferrand, France, August 24th-28th 2015

Schmidt Andersen, M., Henckel, P., Therkildsen, M. & Rinnan, Å. (2015): Application of NIR for monitoring quality traits of mechanically separated poultry meat. 17th International Conference on Near Infrared Spectroscopy, Foz do Iguassu, Brazil, October 18th-23rd 2015

Trade associated journals:

Groves, K. (2015): Mechanically separated meat and meat structure. New Food Magazine, 2, April 23rd

6. Workshop structure

The Workshop will operate under the CEN/CENELEC rules for the CEN/CENELEC Workshop Agreement. The Workshop Chair will manage the Workshop. The Chairman will be appointed at the kick-off meeting.

The responsibility of the Workshop Chair is to preside at Workshop plenary meetings, to ensure the Workshop develops according to the Project Plan and to manage the consensus building process.

Under the responsibility of the Workshop Chair, the Secretariat will support the agreed upon Workshop activities.

7. Resource requirements

The cost of the workshop process will be funded by the MACSYS project . Travel expenses will be paid by the individual participants.

All costs related to the participation of interested parties in the Workshop's activities have to be borne by themselves.

8. Related activities, liaisons, etc.

9. Contact points

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