IDF Newsbrief

Global Dairy Expertise

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MESSAGE FROM THE DIRECTOR GENERAL

Last year we have witnessed surprising outcomes of referenda and elections, leading to major shifts in the political landscape. While their ultimate impact will only become clear in the years to come, on first hand it appears they could be harmful to trade. That would be bad news. Trade is essential to ensure food security in many parts of the world and plays a critical role in reducing poverty, advancing sustainable economic growth, raising living standards and expanding the variety of products available to consumers.

IDF has helped facilitate trade since its inception in 1903 by establishing standards for safety, quality and composition of milk and dairy products that are essential in building mutual understanding and trust in the international dairy sector. These standards are jointly developed by IDF's National Committees and working bodies. Through IDF's collaboration with international organizations such as FAO, Codex Alimentarius, OIE and ISO the standards have global impact, even in countries that are not IDF members.

Let's all work together to recognize and build on the value of open, transparent, rules-based trade policies that foster market integration, create resilient food systems, promote food and nutrition security, enable sustainable and inclusive growth and reward responsible business conduct.

Wishing you and your loved ones all the best for 2017.

Nico van Belzen, PhD

IDF Director General

EXECUTIVE SUMMARY

This issue highlights some of the work IDF is doing to support high quality milk and nutritious, safe and sustainable dairy products. It features IDF's contributions in the field of **antimicrobial resistance** as well as our technical support of the **Codex Committee on Nutrition and Foods for Special Dietary Uses.** Recognizing that some regional organizations have impact beyond their geography, IDF is looking forward to provide science-based input into the work of the **European Food Safety Authority**.

New publications include fact sheets on raw milk cheeses, *Bacillus cereus* in milk and dairy products and *Escherichia coli* as indicator in cheese processing.

IDF AT 38TH SESSION OF THE CODEX COMMITTEE ON NUTRITION AND FOODS FOR SPECIAL DIETARY USES (CCFNSDU)

The Committee reviewed the **Codex standard for follow-up formula**. IDF's involvement has resulted in the recognition that follow up formulas for children aged 12-36 months should contribute adequate amounts of key nutrients from milk, thereby acknowledging the essential role milk plays in nourishing this age group. IDF will continue to participate in this work to provide scientific and technical guidance to Codex member states.

Regarding the Nitrogen to protein Conversion Factor (NCF) the Committee decided to take out the specific NCF for soy (5.71), thereby referencing the general factor 6.25. However, the Committee kept the specific NCF for milk (6.38) as used in other Codex standards for milk products. IDF's NCF task force is considering different scenarios for progressing protein content calculations.

It was agreed that the new AOAC/ISO/IDF methods for total fatty acid profile, myo-inositol, vitamin B12 and vitamin E are fit for purpose and are to become the new type II dispute resolution methods in CODEX STAN 234-1999. Furthermore, the Codex Committee on Methods of Analysis and Sampling (CCMAS) will be requested to consider the proposed AOAC/ISO/IDF method for Chromium, Selenium and Molybdenum and the AOAC/ISO method for vitamin C for review, typing, endorsement and uptake as type II dispute resolution method in CODEX STAN 234-1999.

This successful outcome is once more underlining the value of the close cooperation of IDF with AOAC and ISO in order to get state-of-the-art methods for analysis of infant formula implemented in Codex standards.

Discussion paper on claim for "free" of trans fatty acids (TFA)

CCNFDSU agreed to request guidance from CCMAS regarding suitable methods to support this claim. Because one of these is an IDF/ISO method, IDF will prepare technical guidance for CCMAS on methods to measure TFA.

CCNFSDU concluded that more work needs to be done on the proposed draft guidelines for **ready-to-use therapeutic foods**. IDF will take part in this work to ensure that science-based and globally harmonized views will support the appropriateness of these products that target the most vulnerable populations.

By actively providing science-based comments, IDF represents the credible voice for dairy at CCNFSDU. This years' IDF delegation was composed of H van den Bijgaart (NL), L Candido (UK), D Whitsett-Morrow (US) and L Rycken (Head of delegation- IDF).

IDF CONTRIBUTES TO THE CODEX WORK ON ANTIMICROBIAL RESISTANCE

IDF participated in the Codex Antimicrobial Resistance (AMR) working group that met last December in London. The working group is chaired by the United Kingdom and co-chaired by Australia and the United States of America. Representatives of the World Health Organization (WHO), the Food and Agriculture Organization of the UN (FAO), the World Organization for Animal Health (OIE), and the International Plant Protection Convention (IPPC) shared their views on AMR.

It is important to develop national risk management strategies, consider trade policy and collect data on antimicrobial consumption and resistance. The work should recognize the continuous development of science and clarify the definition of prophylactic antimicrobial use. The approach will use the 'One Health' context, with a focus on public health.

The working group reviewed and revised several key documents that will be used in the work of the Task Force on Antimicrobial Resistance.

IDF delegation was composed of J Jonker (US, head of delegation) and M Sánchez Mainar (IDF).

ACTING REGIONALLY WITH GLOBAL IMPACT: THE EXAMPLE OF EFSA

The European Food Safety Authority (EFSA) was established in 2002 by the European Union (EU) to be a source of scientific advice and communication on risks associated with the food chain. While its formal remit remains within the EU, its actual impact has expanded beyond Europe.

EFSA provides scientific and technical contributions to the EU in Codex-related activities, such as preparing supporting documents for EU delegations. EFSA collaborates with the joint expert committees of FAO and WHO, OIE, IPPC and the Organization for Economic Co-operation and Development (OECD). EFSA's international scientific cooperation fosters the development and implementation of harmonized risk assessment methodologies for collecting and appraising scientific evidence, as well as coherence in risk communication.

EFSA's advice is often incorporated in trade requirements through the EU member countries and multinationals, as well as cited on the websites of food safety authorities all over the world.

EFSA formally recognized IDF as a stakeholder in December 2016. This will enable IDF to attend relevant EFSA meetings, provide science-based input into EFSA's work from the perspective of the global dairy sector and timely inform IDF's members of developments in Europe that may become global topics at a later stage.

PERFORMANCE RECORDING AS A TOOL TO IMPROVE PRODUCTION - ICAR IN PUERTO VARAS

How to optimize the information collected in a farm to improve herd management, cow health and nutritional and genetic evaluation? The recent conference held by ICAR presented some ideas on the topic.

ICAR and IDF presented their project *Reference System for Somatic Cell Counting* during the Milk Analysis sessions, discussing various techniques used to determine milk parameters. The equivalence of the results obtained using the different techniques has been investigated in the ICAR Proficiency Testing program.

Based on the individual cow's information collected, the use of standardized schemes to evaluate these data may offer future farmers optimized solutions for modern, sustainable and profitable dairy farming.

Are you interesting in learning more about the development and improvement of animal identification, performance recording and evaluation in farm animal production? Then join many other dairy stakeholders to the next ICAR meeting in Edinburgh 14-16 June 2017.

ICAR organized its 40th ICAR Conference in Puerto Varas, Chile from 24-28 October 2016. More than 320 participants attended the conference's working groups and the 14 technical sessions

IDF EVENTS

IDF World Dairy Summit 2017

Join us in America's Dairyland for IDF/ISO Analytical Week 2017

Your colleagues at the United States National Committee of the International Dairy Federation (US-IDF) invite you to join us in America's Dairyland for the IDF/ISO Analytical Week 2017, May 8 – 12 in Madison, Wisconsin.

This year's Symposium theme, "New Approaches to the Safety, Quality and Performance Triangle," will stimulate new ideas by hearing from speakers outside of the dairy industry, addressing food safety challenges and opportunities and highlighting technologies in cutting edge endeavors to balance the triangle of Safety, Quality and Performance.

Keynote speaker Mr. Darryl Sullivan, Director of Industry and Regulatory Affairs at Covance Laboratories, member of USP expert committees and board member of AOAC International, will offer a state-of-the art overview of challenges and technology opportunities facing industry today.

A technical tour to Covance Inc. will follow the Symposium on Wednesday, May 10. The tour will adjourn at Wisconsin Brewery for a night of Wisconsin hospitality at this microbrewery known for its outdoor patio area and popular beers.

IDF PUBLICATIONS

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Raw milk cheeses

IDF Factsheet – December 2016

What's the value of raw milk cheeses?

Cheese making is a major industry worldwide, with a rich diversity of cheeses available. Many cheese varieties throughout the world are typically made from raw (unpasteurized) milk. Most of the famous cheeses with the protected designation of origin, such as Comté, Camembert and Roquefort, are made with raw milk, with 350,000 tons manufactured in France and approximately 500,000 tons elsewhere in Europe. Microorganisms, as well as natural enzymes, are considered to be responsible for enhancing desirable flavor characteristics. Consumers appreciate the diverse and distinctive sensory properties of raw milk cheese. The flavors of cheese are nuanced and vary throughout the seasons. These cheeses represent many years of tradition, are usually produced in a specific territory and frequently emphasise a particular rural setting (Montel et al. 2014). In addition, some potential human health benefits associated with the consumption of raw milk cheeses have been described. The benefits include a positive impact on the enteric microbiota of the gut and possible protection against allergy following the consumption of raw milk cheeses (Bertrand et al., 2007; Von Mutius, 2012).

Food safety of raw milk cheeses

Raw milk has the potential to carry harmful bacteria and in this regard, control and prevention of contamination with pathogens are of primary importance to ensure public health (Farrokh et al., 2013).

The food safety risk of raw milk cheeses can be controlled by having in place a high standard of hygiene during milk production, coupled with the implementation of good hygienic practices at processing and as necessary, supported by relevant microbiological controls based on risk analysis, such as aging, throughout the production chain.

Strict hygiene measures need to be implemented along the entire production chain in order to supply high quality, safe and healthy products.

Interventions to assure the safety of raw milk cheeses

An integrated approach for the production of raw milk cheeses should be used from farm to fork in order to control contamination from foodborne pathogens. Production starts at the farm and continues through transport of the raw milk to cheese manufacturing plants, storage and transport of the final product to retail, and to storage, handling and display at the retail premises.

Interventions at the dairy farm

Control of the microbiological quality of raw milk is very important (Collins and Wall, 2004). Only milk with consistently satisfactory quality and safety must be used to manufacture cheeses with unpasteurized milk.

As reliance on measurement of microbiological quality has limitations, food safety relies highly on preventative measures related to animal health, farm hygiene, feed quality, hygienic feeding practices and an increased level of hygiene at milking.

Raw milk cheeses

Raw milk cheeses have a desirable flavour and their consumption has a positive impact on the gut microbiota. Food safety of raw milk cheeses is controlled by interventions at the dairy farm, at the processing plants, and by consumer education. To learn more about it consult the new IDF factsheet on the topic.

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Bacillus cereus in Milk and Dairy Products

IDF Factsheet – December 2016

***Bacillus cereus* in Milk and Dairy Products**

The genus *Bacillus* is the largest genus within the family *Bacillaceae*, presently consisting of at least 226 species most of which are saprophytes widely distributed in the environment, and commonly isolated from soil, air, water, plants and animals.

The majority of *Bacillus* species are commensal and have rarely been associated with diseases in humans or animals; some species are used as probiotics or additives and others have been identified as the cause of food spoilage. The principal exceptions to this are the members of the *B. cereus* group that contain different species of key medical importance, and are the focus of this fact sheet. It should be noted that *B. anthracis*, an animal pathogen that is not associated with dairy products, is excluded from this overview.

Bacteriological characteristics

Bacillus cereus sensu lato (or *B. cereus* group) consists of eight formally recognized species: *B. anthracis, B. pseudomycoides, B. mycoides, B. thuringiensis, B. weihenstephanensis, B. cytotoxicus, B. toyonensis* and *B. cereus sensu stricto* (the *B. cereus* species). Most of these species are very difficult to distinguish, even with 16S rDNA sequencing. Many publications that refer to *B. cereus* actually refer to the B. cereus group.

The *B. cereus* group represents spore forming Gram-positive bacteria that are optionally motile and facultatively anaerobic saprophytes. Some are food pathogens and can cause both diarrheal and emetic human gastrointestinal syndromes. If present in raw milk, their spores can survive the pasteurization process and contaminate product where they have the following growth characteristics:

-Growth temperature: optimally at 30-37°C but also at ≥ 4°C and ≤ 50°C, depending on the genetic group.
-pH range: growth at a wide pH range from 4.3 to 9.3.
-Water activity range: growth within the range 0.912 to 0.995

Some species of this group appear to be non-pathogenic: *B. thuringiensis* is a well-known insect pathogen used as a biocontrol agent. *B. weihenstephanensis, B. pseudomycoides, B. mycoides* have not been described as food poisoning agents. *B. toyonensis* is used as a feed additive.

The origin of contamination

The *B. cereus* group are ubiquitous and abundant as spores in the soil. They are also found in large quantities in silage, feces and litter. *B. cereus* group are not responsible for zoonosis but due to their high presence in the environment, they can be carried by animals, including cows. They can contaminate raw milk by simple transfer during milking, when hygiene conditions are not fully observed, and some strains of the species may cause mastitis in very rare cases.

Pasteurization induces sporulation of *B. cereus* group species, the spores can subsequently survive the pasteurization process and, therefore, contaminate dairy products, causing quality and safety issues.

B. cereus sensu stricto has been identified in virtually all categories of foods. However, the main foods involved in food poisoning are heat-treated food, mainly food based on rice and pasta for the emetic syndrome and pasta for diarrheal syndrome.

Bacillus cereus in milk and dairy products

Bacillus cereus may cause contamination of raw milk leading to food poisoning. Adoption of measures to minimise contamination of food before processing is the best way to avoid its growth to dangerous levels. To learn more about it consult the new IDF factsheet on the topic.

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Escherichia coli as indicator in cheese processing

IDF Factsheet – December 2016

What are coliforms and Enterobacteriaceae?

Coliforms can be found in the aquatic environment, in soil and on vegetation and are present in large numbers in the feces of warm-blooded animals. While coliforms themselves are not normally the cause of serious illness, they are easy to culture, and their presence can be used to indicate that other pathogenic organisms of faecal origin may be present.

Coliforms are a part of a Family of bacteria, Enterobacteriaceae (EB), which are ubiquitous in the environment, and were initially isolated from the gut flora of mammals (hence, the name, bacteria of the intestine). This family is considered to be a more global indicator of hygiene in food process environments.

What are *Escherichia coli*?

Escherichia coli are a group of mostly harmless bacteria that inhabit various ecological niches, and classically the human digestive system. They are part of the larger group of coliform bacteria. *Escherichia coli* can be beneficial to its host by producing vitamin K2 or preventing colonisation of harmful bacteria, for example, the probiotic *E. coli* Nissle 1917. There are also some isolates of *E. coli* that are highly pathogenic for the human host, such as *E. coli* O157:H7 and other related pathogenic strains (which can be called EHEC or STEC [VTEC]).

What are indicator organisms?

Indicator organisms are a group of organisms (coliforms, EB or a specific species e.g. *E. coli*) that are more likely to be found through testing because they appear at relatively high numbers or more often compared to the target microorganism of concern. They are harmless bacteria that can be easily measured and correlate with the likelihood of the presence of the microorganism of concern.

The presence of indicator organisms in foods or in the processing environment can be used to assess the hygienic status and quality of the food product or the adequacy of control measures in place.

***E. coli* as indicator organisms of faecal contamination**

For many years, it was thought that *E. coli* could only survive in the environment for a limited amount of time, which made them potential indicator organisms to test for faecal contamination. However, it is increasingly being shown that *E. coli* can persist in the environment and can even increase in numbers outside the host. Therefore, not all *E. coli* enter the food chain through direct contact with faeces and trend analysis of analytical data shows that *E. coli* does not seem to be an appropriate indicator of faecal contamination.

E. coli carried in the intestines of ruminants are excreted in their feces, and can spoil the teats of cows, increasing the likelihood of contamination during the milking process. As a result, good hygiene practices on the farm and during milking can limit faecal contamination, without eradicating it totally, so the contamination of milk with low numbers of *E. coli* is inevitable, even under good manufacturing conditions.

Escherichia coli as indicator in cheese processing

Coliforms can be found in the environment and can be used to indicate that other pathogenic organisms of faecal origin may be present. This factsheet explains the use of *Escherichia coli* as hygiene indicator in cheese processing. To learn more about it consult the new IDF factsheet on the topic.

Recent translations

As a global organization, IDF gratefully acknowledges the efforts of its members to translate IDF document in their local language. Recent examples include the Bulletin of the IDF N° 479/ 2015: A common carbon footprint approach for the dairy sector in Polish and the Dairy Declaration of Rotterdam document in Dutch. The latter are also available in Chinese, French, Japanese and Spanish.

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