NETWORK ON MICROBIOLOGICAL RISK ASSESSMENT (MRA) 23rd meeting

4-5 October 2023
14:00-18:00 / 09:00-13:00 (CET)
Minutes agreed on 24 October 2023

Location: EFSA-Parma and online

Attendees:

- Network Participants:

Country	Name[1]
Austria	Monika Matt
Belgium	Ria Nouwen Kim Feys
Bulgaria	Hristo Najdenski
Croatia	Brigita Hengl Jasenka Petric
Cyprus	Christos Kourtis
Czech Republic	Ondrej Daniel
Denmark	Alessandro Foddai
Estonia	Mati Roasto
Finland	Jukka Ranta
France	Estelle Chaix Pauline Kooh
Germany	Anja Buschulte
Greece	Panagiota Gousia Ioanna Apostolou
Hungary	Zsuzsanna Sreterne Lancz
Ireland	Mary Lenahan
Italy	Maria Elisabetta De Angelis Francesco Pomilio Fabrizio Anniballi
Lithuania	Snieguole Sceponaviciene
Luxembourg	Alexandra Schoos
Netherlands	Aarieke De Jong
Norway	Danica Grahek-Ogden
Portugal	Manuela Sol
Slovak Republic	Lubomir Valik
Slovenia	Pavel Pollak
Sweden	Jakob Ottoson
Switzerland	Françoise Fridez

- IPA countries:
  Renis Maci (Albania), Jonida Boci (Albania), Slobodan Dojčinović (Bosnia Herzegovina,) Besart Jashari (Kosovo), Snežana Vučinić (Montenegro), Dejan Krnjaic (Serbia)

- Hearing experts:
  Marieke Opsteegh (RIVM); , Gerald Umhang (Anses);
  Mieke Uyttendaele (Gent university);
  Ana Sofia Ribeiro Duarte (Food DTU); Tine Hald (Food DTU)

- EFSA:
  BIOHAW: Ruben Barcia, Kateryna Chuzhakina, Sandra Correia,
  Ernesto Liebana, Winy Messens, Eleonora Sarno, Pietro Stella
  ENREL: Elina Ciekure

1. Welcome and apologies for absence

The Chair welcomed the participants from 21 Member States, Norway and Switzerland as well as Observers from Albania, Bosnia Herzegovina, Kosovo, Montenegro and Serbia.

Apologies were received from Malta, Poland, Romania and Spain.

2. Adoption of agenda

The agenda was adopted without changes.

3. Agreement of the minutes of the 22nd meeting of the Chair MRA Network held on 18-19 October 2022, Parma and online

The minutes were agreed by written procedure on 26 October 2022 and published on the EFSA website.[2]

4. Anses Opinion on the pathogenicity of STEC (FR)

Anses reviewed its previous opinion of May 2017 on the pathogenicity of STEC in the light of the EFSA (2020) opinion and FAO/WHO (2018) report.[3] Based on the analysis of French surveillance data (2017-2021), Anses proposes a new classification of STEC strains according to their virulence potential. This classification takes into account the association of strains with severe forms of infection (mainly HUS, followed by bloody diarrhoea).

STEC strains with stx2a and/ or stx2d and adherence genes, eae or aggR (group I) , have the highest potential to cause HUS. eae or aggR -negative strains with stx2a and/or stx2d variants (group II) also have a high potential to cause HUS, particularly in adults. STEC strains with other subtypes of the stx gene are less frequently associated with HUS cases and are mainly found in cases of bloody diarrhoea and diarrhea (groups III and IV).

5. Microbial risks due to power failure (SE)

Due to energy crisis, a lot of questions have arisen concerning the safety of refrigerated food during a power failure. The study looked at temperature curves in food and modelled bacterial growth in food normally kept in the fridge during rising temperatures mimicking a power failure lasting for 48 h. The results will be used to provide guidance in order to reduce food waste without affecting food safety.

6. Rapid risk assessment on heating of eggs (SE)

In the beginning of the year *Salmonella* Enteritidis was found in layers for the first time in decades in Sweden. Millions of eggs were recalled. The study assessed whether soft boiled eggs from recalled batches could still be safe to eat. If the yolk is creamy but firm, the temperature is at least 65 °C which will render enough inactivation of S. Enteritidis.

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[2] https://www.efsa.europa.eu/sites/default/files/2022-10/20221018-m.pdf
[3] https://www.anses.fr/fr/system/files/BIORISK2020SA0095.pdf

7. How to handle raw milk coming from dairy farms with botulism? (DE)

The German Federal Institute for Risk Assessment (BfR) has assessed the risk of contracting botulism in Germany from the consumption of milk and dairy products if milk from healthy cows is processed that originates from a farm with acute cases of botulism in the dairy herd.[4] The following scenarios were included in the assessment:

1. The direct sale of raw milk from healthy cows from a farm where acute cases of botulism have occurred in the dairy herd

2. Raw milk from dairy herds where cases of acute botulism have occurred enters the food chain without further treatment

3. Raw milk from dairy herds where cases of acute botulism have occurred is ultra-high-heated before consumption.

8. Echinococcus spp. eggs on berries harvest in the Netherlands (NL/FR)

Recently, a large European study (OHEJP Meme) identified the DNA of the zoonotic parasites *Echinococcus multilocularis* and *Echinococcus granulosus* sensu lato on lettuces and berries in significant proportions from several European countries, including among berries samples from the Netherlands. These results represent an important step towards understanding the contribution of food sources to human infections, even if the viability of the eggs could not be assessed. In this context, a study will be engaged in the *E. multilocularis* high endemic region of Limburg in the Netherlands in order to investigate the current prevalence of *E. multilocularis* in foxes, in vegetables and berries and trying to evaluate the potential association with a higher risk of human infection.[5]

9. Salmonella enterica in the European pork production chain (EE)

The presentation provided an overview of Salmonella enterica in the European pork chain, discussing prevalence, serotype diversity, antimicrobial resistance during the last 20 years.[6] Also, few examples were given on the prevalence of Salmonella enterica in the Estonian pork production chain. Additionally, future trends and recommendations regarding control of Salmonella in the European pork production chain were shortly introduced. Topic relates with international co-operation within COST Action 18105, Risk-based Meat Inspection and Integrated Meat Safety Assurance.

10. Identification of infection sources and transmission routes of Campylobacter spp. (FI)

Preliminary results from the project, consisting of analysing (1) Campylobacteriosis cases 2004-2021 with background statistics, (2) food- and waterborne outbreaks 2010-2021, (3)

[4] https://www.bfr.bund.de/cm/349/acute-botulism-in-german-dairy-herds.pdf
[5] Deliverable JRP18-WP3-T6-Contamination of vegetables for human consumption by Em/Eg | Zenodo
[6] https://doi.org/10.1016/j.tifs.2022.12.007

case-control study in July-August 2022, (4) sequence and cluster analysis of bacteria isolates, (5) source attribution modelling using MLST allele types. A draft manuscript under preparation. Source attribution and case-control study indicated similar association of cases with potential sources, as well as the genotype clusters. During covid19 pandemic, overall number of campylobacteriosis cases dropped dramatically.

11. Risk profile of Listeria monocytogenes in ready-to-eat foods (BE)

In recent years, pre-packed ready-to-eat (RTE) foods on the Belgian market have shifted to a more plant-based composition due to concerns about health, animal welfare, and sustainability. However, similar to animal-based RTE foods, plant-based RTE foods can be susceptible to the presence and outgrowth of L. monocytogenes. This can give rise to health risks for vulnerable consumers, which is substantiated by multiple recent listeriosis outbreaks reported for plant-based RTE foods in the EU and USA. In this regard, the prevalence and growth potential of *L. monocytogenes* were evaluated in this study for three pre-packed, plant-based RTE food categories on the Belgian market, i.e. sliced vegan and vegetarian deli sandwich fillings, fresh-cut (mixes of) leafy vegetables, and multi-ingredient salad bowls.

12. Growth of persistent and sporadic isolates of L. monocytogenes (SK)

This study aimed to investigate the effect of temperature (in the range of 6 °C to 43 °C) on the growth of two genotypically and phenotypically different strains of *L. monocytogenes* LM9611-19 and LM120/5 in Tryptone Soy Broth (TSB) and synthetic cheese medium (SCM). Based on primary and secondary modelling, the growth of the strains is characterised to evaluate whether they behave differently from each other. Cardinal temperature values for *L. monocytogenes* strains under study, as well as the variability and validation indices, will be provided.

13. Potential risks associated with plant-based dairy and meat substitutes (IE)

There is a growing market for plant-based substitutes as ready-to-eat plant-based alternatives to animal products, meat-alternatives (sliced delicatessen style meats) and dairy alternatives (cheese, milk, yogurt). At the moment, a wide variety of these products are available on the market and they are made from different types of plant-based ingredients (e.g. nuts, pea protein, coconut, soya). Four plant-based food outbreaks were listed, all on cheese alternatives with *Salmonella* as agent in three outbreaks, and *L. monocytogenes* in a single outbreak.

As there was also a recent recall in Ireland related to a listeriosis outbreak caused by a vegan cheese, the Irish representative introduced the discussion with the MSs about concerns in their country in relation to the risk associated with RTE plant-based dairy and meat substitutes, and requested an exchange of studies carried out on this topic. Concerns were raised by several MS representatives.

14. ECDC-EFSA Rapid Outbreak assessments

A presentation was given to illustrate the recently published assessments on multi-country foodborne outbreaks in EU. These technical reports known as Rapid Outbreak Assessments – ROA are jointly prepared by EFSA and ECDC. These reports aim to support risk managers and policymakers in the EU (EC and EU member states) in the investigation of the food incidents and in the implementation of interventions along the food chain aimed at the removal of the contaminated food and the prevention of new infections. The presentation focused on three ROAs published in 2023 and regarding an outbreak of *Salmonella* Seftenberg ST14 infections linked to tomatoes, an outbreak of *Salmonella* Virchow ST16 infections linked to chicken meat, and an outbreak of *Salmonella* Mbandaka ST413 infections linked to chicken meat. EFSA highlighted the importance of sharing WGS data on a regular basis to support the outbreak investigation activities.

15. EFSA Focal Point Framework 2023-2027

The aim of the presentation was to raise awareness and visibility of Focal Point network framework 2023-2027 that envisages new evolved approach in EFSA cooperation with FP and MS, explains the vision and mission of FP network. The new framework includes the tailor-made part through which Member States have possibility to propose activities to be implemented under FP framework. The activities under tailor-made part are intended to address risk assessment and food safety needs of MS and EFSA and to bring benefits to both Member States and EFSA. These short and mid-term activities could serve as ground for bigger long term partnerships among countries and also with EFSA. Presentation shortly introduces to proposal submission and assessment process.

16. Refrigerated storage of eggs (DK)

The Danish Veterinary and Food Administration (DVFA) requested to estimate the risk of increase in the number of egg-related salmonellosis by removing the refrigeration requirement for table-eggs, while keeping the recommendation for storage at a constant temperature, for a) small egg producers only and b) both small and large egg producers - i.e. the national requirement to store eggs at a maximum of 12 °C in the distribution chain is removed. An exposure assessment was carried out using two models simulating (1) the bacteriological testing of flocks for *Salmonella* on-farm; and (2) simulating the growth of *Salmonella* in a single contaminated egg along the exposure pathway (farm-to-fork). It was concluded that by removing refrigeration from the risk pathway, the risk of human illness due to the consumption of well-cooked eggs remained negligible. For small producers, there was no increase in the average number of annual illnesses/farm and for large producers, the annual number of illnesses/farm varied with 99% probability between 0 and 5, for eggs consumed uncooked or lightly cooked. At national level, the absolute number of egg-attributed human *Salmonella* cases/year varied with 99% probability between 0 and 35, with average of 10 cases/year for eggs consumed uncooked and 8 cases/year for eggs consumed lightly-cooked. It was pointed out that consumers and producers must be advised that cooling extends the time period before the egg-yolk membrane breaks, and cooled storage remains recommended after the yolk-membrane integrity time is reached.[7]

[7] https://orbit.dtu.dk/en/publications/risk-assessment-of-the-removal-of-the-requirement-for-storing-she

17. Pathogenic Enterobacteriaceae in cakes using MALDI-TOF (HR)

The goal of this research was to identify which *Enterobacteriaceae* species are present in cakes from confectionery establishments and whether these are species that can be considered pathogenic for humans and what their harmful impact on human health could be.

The samples were analysed for the presence of *Enterobacteriaceae* in accordance with the HRN ISO 21528-2:2017 standard. In cases where the samples contained the number of *Enterobacteriaceae* greater than 102 CFU/g, the MALDI-TOF method was used to identify individual species of Enterobacteria.

Ten *Enterobacteriaceae* species were determined: *Enterobacter kobei, Enterobacter cloacae, Pantoea agglomerans, Serratia liquefaciens, Enterobacter asburiae, Klebsiella oxytoca, Buttiauxella gaviniae, Buttiauxella warmboldiae, Raoultella* and *Cedecea neteri*. All of them, according to the literature, were previously isolated from food or water, and all species except *Buttiauxella warmboldiae* were isolated from humans and the environment. However, for the species of Enterobacteriaceae determined in this research, food was not a vehicle in case of human illness.

18. Pericarditis in broilers at post-mortem inspection (SE)

Pericarditis found at post-mortem inspection of broilers is a common cause of cassation. The inspector can decide on local (organs) or total cassation of the carcass. This decision needs to be taken within seconds, but what are the actual food safety risks? A literature search was carried out to identify hazards for the development of pericarditis in broilers and assess related risks with potential bacteraemia in affected broilers. There are many possible causes for pericarditis, e.g. Salmonella, but also opportunistic bacteria and avian viruses. The most common cause for pericarditis reported is colibacilloses (Avian Pathogenic E. coli, APEC). APEC strains can further carry genes coding for extended spectrum betalactamases. Based on infection trials, surviving birds are cleared from infection within a week. Further, studies have shown limited overlap between APEC and human E. coli including ESBL-producing E. coli. Hence, the risk for consumers of broilers with signs of pericarditis is considered very low.

19. Update on Taenia solium outbreak (BE)

A cluster of 3 neurological cysticercosis cases caused by *Taenia solium* was detected among children living in Lier. The affected children were diagnosed in the first half of 2023, they had no travel history and the only apparent link is that they frequent the same school for basic education, though in different classes because they have different ages. Cysticercosis is not necessarily linked to food consumption, as the children are intermediate host in this case. They may have been infected by a common source, which is a human hosting the *Taenia solium* in his bowel and spreading its eggs due to insufficient hand hygiene. The infection probably happened more than a year ago. The source can be detected through stool sampling. Therefore, the current examination is focusing on people in contact with the children at school, especially people handling their foods, but not on food itself. The main goal is to ensure a safe environment at school.

20. Recent and ongoing EFSA BIOHAZ activities

The EFSA BIOHAZ Team presented ongoing and completed activities.

Ongoing activities:

- Update on QPS activities[8]
- Persistence of microbiological hazards (EFSA-Q-2022-00217)
- Vibrio spp. in seafood in the EU (EFSA-Q-2022-00826)
- Use of PAA to reduce contamination on beef carcasses (EFSA-Q-2022-00626)
- Impact of the proposed revised Australian Microbiological Monitoring programme (EFSA-Q-2023-00058)
- Risk assessment of parasites in fishery products (EFSA-Q-2023-00090 and EFSA-Q-2023-00172)
- AMR Water procurement
- Carbacamp project
- Carbapenem resistance *E. coli* in animals

Adopted BIOHAZ Panel opinion:

- Microbiological safety of aged meat[9] (presentation was postponed to next meeting)

Any Other Business

The next MRA network meeting is planned for autumn 2024. The network members suggested to have an additional web-meeting in spring 2024, if possible.

[8] https://www.efsa.europa.eu/en/topics/topic/qualified-presumption-safety-qps
[9] https://www.efsa.europa.eu/en/efsajournal/pub/7745