

codex alimentarius commission



FOOD AND AGRICULTURE
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Agenda Item 3a

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JOINT FAO/WHO FOOD STANDARDS PROGRAMME

CODEX COMMITTEE ON FOOD HYGIENE

Forty first Session

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MATTERS ARISING FROM THE WORK OF FAO AND WHO AND OTHER INTERNATIONAL INTERGOVERNMENTAL ORGANIZATIONS

Progress Report on the Joint FAO/WHO Expert Meetings on Microbiological Risk Assessment (JEMRA) and Related Matters

Prepared by FAO and WHO

INTRODUCTION

As Codex endeavours to provide risk management guidance on a wide range of issues pertinent to the safety and quality of food in international trade in order to protect consumer health, FAO and WHO aim to provide the relevant scientific advice in a timely manner. This paper describes the scientific advice and related outputs that FAO and WHO have developed relevant to the specific agenda items of the 41st Session of the Codex Committee on Food Hygiene (CCFH) and provides an update on follow-up activities to previous work of the Committee.

A) RECENT FAO/WHO ACTIVITIES RELEVANT TO THE ONGOING WORK OF CCFH

1. Control of *Campylobacter* and *Salmonella* spp. in Chicken Meat *(Relevant to Agenda item 4).*

i) Proposed Draft Guideline for the Control of *Campylobacter* and *Salmonella* spp. in Chicken Meat

Salmonellosis and campylobacteriosis are among the most frequently reported foodborne diseases worldwide. While numerous potential vehicles of transmission exist, commercial chicken meat has been identified as one of the most important food vehicles for these organisms. Although specific data on the burden of foodborne disease associated with *Salmonella* and *Campylobacter* in poultry is limited, the role of poultry is considered to be significant in this respect; however, the risk in different countries varies according to control measures and practices implemented along the chain from primary production to final preparation of the meat for consumption.

In 2007, the Codex Alimentarius Commission agreed that the development of guidelines for the control of *Salmonella* and *Campylobacter* in poultry was a priority. At the 39th Session of the Codex Committee on Food Hygiene (CCFH), in late 2007, it was agreed to address this problem by the development of draft guidelines. The guidelines were to consist of 3 sections: one addressing good hygienic practices; another covering hazards-based control measures; and a third focusing on risk-based control measures. CCFH in its 40th Session, requested FAO and WHO to provide necessary scientific advice to continue its work. In

response to that request, FAO and WHO convened an *ad hoc* Technical Meeting from 4 to 8 May 2009 in Rome, Italy. The draft report of the meeting has been circulated through the Codex system.

At the Technical Meeting the experts carried out an independent assessment and review of all available scientific information on control of *Salmonella* and *Campylobacter* at relevant stages of the broiler supply chain. This was conducted using the Codex draft guidelines and thereafter, adding further interventions that had not been included. For every step of the production chain, an attempt was made to evaluate the intervention in quantitative terms, i.e. according to their likely effects in reducing the prevalence and/or concentration of the hazard in each case. Particular attention was given to the likely outcome of hazard reduction in a commercial setting.

The latest scientific evidence was used to supplement and expand the semi-systematic literature review that had formed the basis of the extensive draft guidelines. The experts found that there were no quantitative data available on the effects of specific interventions applied during live animal production on the prevalence and/or level of contamination with *Salmonella* and *Campylobacter*. Furthermore, the effects of any interventions aimed at primary production had not been validated fully in a commercial setting. Therefore, interventions for application in the pre-harvest phase of poultry production were all classed as GHP¹.

The GHP measures described in the Codex draft guidelines regarding scalding, de-feathering and evisceration were supported by the Technical Meeting. No further scientific data was presented by the experts to warrant description of potential hazard-based control measures.

The GHP measures described in the Codex draft guidelines regarding washing and chilling, and also retail and consumer handling, were supported by the Technical Meeting. Quantitative data on potential hazard-based controls on account of their likely impact on prevalence and/or concentration of hazards on the carcass were also supported by the Technical Meeting, with additional data being provided in some cases.

ii) *Web-based Tool for RM*

In relation to the risk-management questions posed by CCFH, the feasibility of developing a Web-based risk-management decision-support tool was discussed and supported by the Technical Meeting. The primary application of the tool would be to demonstrate in a simplified manner the relative effects of different control measures, either alone or in combination, on hazard reduction and consequently relative levels of food borne illness. This would enable countries to evaluate combinations of control measures available within their processing systems using a risk-based approach. The decision tool should also be of considerable benefit to industry in designing HACCP plans and choosing critical limits for hazard-based control measures.

Development of the prototype is now in progress and advances were presented to the Codex working group. An up-dated version of the tool will be presented at the forthcoming CCFH session.

Follow-up action by CCFH

FAO and WHO are requesting comments on the need for further scientific advice to continue the elaboration of the guidelines as well as the suggestions to improve the web-based risk management decision-support tool.

2. Microbiological Hazards in Fresh Produce (*Relevant to Agenda item 5*).

In 2007, FAO and WHO convened a meeting of experts to address a request from the Codex Alimentarius Commission (CAC) through the 38th Session of the Codex Committee on Food Hygiene (CCFH) to provide scientific advice to support the development of commodity-specific annexes for the CAC “Code of Hygienic Practice for Fresh Fruits and Vegetables”. The request was in response to the increasing reports of food safety incidents associated with fresh produce and associated public health and trade issues. A list of fresh produce commodities of concern for food safety globally was identified and prioritized in three levels based on criteria related to food safety risk. Leafy vegetables and herbs were identified as being the highest level of concern and the CCFH is preparing risk management guidelines accordingly.

¹ The apparent absence of peer-reviewed scientific publications on the efficacy of specific interventions in commercial poultry flocks in terms of food safety of broiler meat needs to be seen in context. Such interventions have been widely used in many countries as part of national control programmes for *Salmonella* and, over a period of time, have been associated with significant reductions in prevalence of pathogens at the pre-harvest stage of broiler production. The countries include Finland, Sweden, Denmark and The Netherlands, and the effectiveness of their respective control strategies is described in peer-reviewed scientific publications and in national reports that include surveillance data for *Salmonella* in poultry. See, for example, Wegener *et al.*, 2003; Majjala *et al.*, 2005; Van der Fels-Klerx *et al.*, 2009.

As outbreaks of food borne illness attributed to fresh produce have continued to occur since 2007, FAO and WHO considered it was timely to review information available on fresh produce and food safety since the Expert Meeting in 2007 to determine whether the list of produce commodities of concern should be revised and whether the priorities assigned in 2007 remain valid. This revision would provide further scientific advice to CCFH on the development of Annexes for the Code of Hygienic Practice for Fresh Fruits and Vegetables. A JEMRA call for data for Fresh Produce (June 2009) was sent out to collect information from food safety authorities. With this information and the current literature available in the public domain, a Joint FAO/WHO electronic discussion group on Microbiological Hazards in Fresh Produce was convened to review the risk based criteria, the list of fresh produce commodities of concern and their priority according to concern for global food safety (August – September, 2009).

A report including the updated information on fresh produce and food safety from 2007-2009 and the outcome of the Joint FAO/WHO electronic discussion group will be provided to CCFH.

Follow-up action by CCFH

FAO and WHO are requesting comments by the Committee on the need for further scientific advice to continue the development of Annexes for the Code of Hygienic Practice for Fresh Fruits and Vegetables.

3. Viruses in Food.

i) Proposed Draft Guidelines on the Application of General Principles of Food Hygiene to the Control of Viruses in Food. (Relevant to Agenda item 8)

The 40th Session of the Codex Committee on Food Hygiene agreed to start new work on viruses in food and asked the 32nd Session of the Commission to approve new work on the Code of Hygienic Practice for the Control of Viruses in Food. The Committee also agreed to establish a working group led by The Netherlands, to meet in March 2009 to develop the Code of Hygienic Practice for Control of Viruses in Food for circulation at Step 3 for comments and consideration by the next session of the Committee. Following the request of the Committee, the 32nd Session of the Commission (29 June – 4 July 2009) approved this new work. The JEMRA report on **Viruses in food: scientific advice to support risk management activities: Meeting report** (MRA 13. FAO/WHO 2008), was fully considered by the working group. The report is available at http://www.fao.org/ag/agn/agns/jemra_riskassessment_viruses_en.asp.

Follow-up action by CCFH

Since the Committee has decided to take on new work to address the problems of viruses in food, FAO and WHO would appreciate receiving explicit guidance as to any additional scientific advice required to continue this work.

4. Expert Consultation on the use of ‘active chlorine’ in the food industry.

CCFAC and CCFH have requested FAO and WHO to address the safety of use of ‘active chlorine’ in the food industry. A core group of experts has been identified and met in November 2007 to clearly define the scope and outline of the project. Working papers were prepared as basis for discussion at and international expert consultation. The Joint FAO/WHO Expert meeting on the benefits and risks of the use of chlorine-containing disinfectants in food production and food processing was held 27 - 30 May 2008 in Ann Arbor, Michigan, United States of America.

The expert meeting drew from the experience of 20 experts from 13 countries and was dedicated to assess the benefits of the reduction of foodborne disease risk by reduction and control of contamination of pathogenic micro-organisms by direct treatment of food with disinfectants in various steps of food production and processing and the potential health risks from ingestion of chlorine and non-chlorine chemical disinfectants and their reaction by-products.

The predominating world-wide treatment scenarios for poultry, red meat, fish and fishery products, fresh produce (fresh fruit and vegetables, including sprouts and hydroponics) and food contact surfaces were used in the assessment of the benefits and risks in a step-wise qualitative approach and conclusions and recommendations were agreed. The identified residues of chlorine-containing disinfectants and by-products did not raise specific toxicological concerns at estimated exposures, but benefits of microbiological risk reduction were identified for some of the treatment scenarios. The meeting identified important gaps in the data available and furthermore emphasized that disinfectant treatment should not be used to mask poor hygienic practices. As extensive editing of the report is necessary, a prepublication issue of the report is only foreseen by the end of 2009. Information on the project can be found at http://www.fao.org/ag/agn/agns/chemicals_chlorine_en.asp and http://www.who.int/ipcs/food/active_chlorine/en/index.html.

5. Draft Annex on Control Measures for *V. parahaemolyticus* and *V. vulnificus* in Molluscan Shellfish (Relevant to Agenda item 7).

The Committee agreed with the proposal to develop an annex on control measures for *V. parahaemolyticus* and *V. vulnificus* in molluscan shellfish to the Proposed Draft Code of Hygienic Practice for Pathogenic *Vibrio* species in Seafood. The physical working group led by Japan, met from 26 to 29 May 2009, in Kyoto, Japan, only to develop this Annex for circulation at Step 3 for comments and consideration by the next session of the Committee. The JEMRA reports on **Risk assessment of cholerae *Vibrio cholerae* O1 and O139 in warm-water shrimp in international trade** (MRA 9. FAO/WHO, 2005), and **Risk assessment on *Vibrio vulnificus* in raw oysters** (MRA 8. FAO/WHO, 2005) were made available to the working group members and could be consulted at: http://www.fao.org/ag/agn/agns/jemra_riskassessment_vibrio_en.asp.

The JEMRA draft report on *V. parahaemolyticus* was also made available to the working group members.

6. JEMRA publications: Recent additions to the FAO/WHO Microbiological Risk Assessment Series.

i) Recently Published

- **Exposure assessment of microbiological hazards in foods: Guidelines.** Microbiological Risk Assessment Series 7 - FAO/WHO (2008)
- **Viruses in food: scientific advice to support risk management activities: Meeting report.** Microbiological Risk Assessment Series 13. FAO/WHO (2008)
- **Microbiological hazards in fresh leafy vegetables and herbs: Meeting report.** Microbiological Risk Assessment Series 14. FAO/WHO 2008
- ***Enterobacter sakazakii* (*Cronobacter* spp.) in follow-up formula: Meeting report.** Microbiological Risk Assessment Series 15- FAO/WHO (2008)

ii) Coming soon

- **Risk assessment of *Campylobacter* spp. in broiler chickens: Interpretative Summary.** Microbiological Risk Assessment Series 11 - FAO/WHO
- **Risk assessment of *Campylobacter* spp. in broiler chickens: Technical Report.** Microbiological Risk Assessment Series 12 - FAO/WHO
- **Risk Characterization of Microbiological Hazards in Foods: Guidelines.** Microbiological Risk Assessment Series 17 - FAO/WHO
- **FAO/WHO Technical Meeting on Salmonella and Campylobacter in Chicken Meat: Meeting Report.** Microbiological Risk Assessment Series 19 - FAO/WHO

B) FOLLOW-UP ACTIVITIES TO PREVIOUS WORK OF THE COMMITTEE

1. **Expansion of the Web based Sampling Tool for *Enterobacter sakazakii* (*Chronobacter* spp).**

In January 2006 JEMRA convened an expert panel to review and implement a risk assessment tool considering the infection of infants with *E. sakazakii*. A key component of this risk assessment is a module which explicitly examines sampling plans for powdered infant formula and their efficiency. However, the sampling tool is fully extensible to other pathogen-commodity combinations for which sampling may be applied. Therefore, a stand alone sampling tool is under development by JEMRA. The tool includes a web-based interface enabling users to interact with the model via standard Internet browsers. An update on the status of the Web based Sampling tool includes expanded and enhanced descriptions of sampling plans in general; descriptions of the tools available (generic sampling tool and Industry Performance tool), and help on using both of the tools in the website content and the web tools. Technical documentation has been developed and will be added to the site shortly.

C) OTHER RELATED ISSUES

1. EMPRES Food Safety.

FAO has established the provision of emergency management systems for the food chain as a key operational priority. The Food Chain Crisis Management Framework (FCC) of FAO builds upon FAO's technical and operational expertise in dealing with animal diseases, plant protection and food safety and its longstanding working relationships with governments and regional organizations to create a food chain safety continuum and ensure that the systems, standards and capacities are in place for predicting, preventing or responding to emergencies. One of the units which integrate the FCC is the Emergency Prevention and Early Warning Unit located in the relevant technical divisions and input is provided by the Emergency Prevention System (EMPRES). This is accomplished through the provision of the essential services involving early detection, early warning and risk assessments of food safety risks along the entire food chain. EMPRES programmes were initially established for animal and plant health programmes (EMPRES Animal Health and EMPRES Plant Protection), and FAO has directed that the next priority is the EMPRES Food Safety component.

During the 32nd Codex Alimentarius Commission, a side event on the EMPRES Food Safety and FCC was held on 3 July 2009 attended by many Codex delegates, and the programme's objectives and mechanisms were shared and discussed. From 31 August to 1 September 2009, EMPRES Food Safety seminar/workshop was organized to discuss the topic on "identifying, prioritizing and managing emerging food safety threats". The difference between "predictive" early identification systems and "responsive" early identification systems for food safety risks was discussed to identify the different roles and critical synergies between the systems, including the positive interaction with the Joint FAO/WHO International Food Safety Authorities Network (INFOSAN).

EMPRES Food Safety plans to announce a call for experts in a wide range of food safety topics including microbiological risks in food and feed, in order to establish the EMPRES Food Safety Expert Roster to respond to various needs in the area of work. For more information, visit our website which will soon have a link to the programme at: <http://www.fao.org/ag/agn/agns/> or e-mail at EMPRES-FS@fao.org.

2. Global Initiative for Food-related Scientific Advice (GIFSA).

In an attempt to meet the growing demand for scientific advice as challenges in the fields of food safety and nutrition continue to emerge, FAO and WHO established a Global Initiative for Food-related Scientific Advice (GIFSA). The initiative was launched at the 30th Session of the Codex Alimentarius Commission, 2 – 7 July 2007, to ensure the sustainable funding of the programmes of FAO and WHO on the provision of scientific advice to the Codex Alimentarius Commission and member countries. Through this initiative FAO and WHO aim to build awareness in member countries on the provision of scientific advice, actively seek financial and in-kind contributions from member countries, strengthen collaborations in order to ensure the availability of national experts to contribute to scientific meetings, facilitate the secondment of qualified experts to work directly on scientific advice issues, and facilitate submission of relevant scientific data to FAO and WHO as a basis for risk assessments and scientific advice. It is considered to be an important tool to promote timeliness and efficiency, while ensuring the continuation of the highest level of integrity and quality. Contributions will be accepted from governments, organizations and foundations in accordance with FAO and WHO rules. FAO and WHO have established separate accounts in each Organization to facilitate receipt of contributions.

Appreciation is extended to the governments of the USA and Italy for the resources which they have provided to GIFSA to date to support the provision of scientific advice in 2008. Further information is available from the FAO (http://www.fao.org/ag/agn/agns/advice_en.asp) and WHO (<http://www.who.int/foodsafety/codex/gifssa/en/index.html>) websites.

3. Other FAO and WHO related activities.

For other FAO and WHO related activities, please refer to the document “Matters arising from FAO and WHO” prepared for the 32nd session of the Codex Alimentarius Commission, electronically available at <ftp://ftp.fao.org/codex/CAC/CAC32/al3209Fe.pdf>.