



Food and Agriculture Organization
of the United Nations

FAO Expert Meeting on Microbiological Risk Assessment

CALL FOR EXPERTS AND DATA ON MICROBIOLOGICAL RISK ASSESSMENT OF CLOSTRIDIUM SPP. IN FOODS

Background

The genus *Clostridium* encompasses several toxigenic species recognized as significant human pathogens, notably *C. botulinum*, *C. perfringens*, and *C. difficile*. These bacteria are commonly identified in various food sources. Foodborne botulism, induced by ingestion of as little as 50 ng of botulinum neurotoxin, results in severe and frequently fatal neuromuscular paralysis. Foodborne illness due to *C. perfringens* ranks as one of the most frequent causes of foodborne illnesses in many countries, imposing a health and great economic burden. Recent data indicate an increasing proportion of community acquired *C. difficile* infections. The medical costs associated with *C. difficile* infections amount to billions of US dollars in some countries annually. Limited data are available regarding the control of *Clostridium* spp. in foods, and specific strategies to inhibit its growth and toxin production in food sources remain undetermined.

At least four Codex documents mentioned *Clostridium* spp.,¹ where practice on control measurements, hazard characteristics, but exposure along the food supply chain were not fully addressed. To provide a better understanding and control measurement of *Clostridium* spp. in foods, FAO is undertaking new work to collect recent research and surveillance findings about this group of pathogens as well as data representing the different food commodities and geographical regions associated with diseases caused by these organisms.

This call for experts seeks to identify scientists who, in their individual capacity, can contribute to the successful completion of this task. In addition, we are also seeking data on the control of *Clostridium* spp. in food. The purpose of the expert consultation is to review and discuss the available data and background documents, and to assess possible good practices on *Clostridium* spp. control in foods. Information will provide a range of risk management options for a variety of products. Specifically, scientific advice is needed to provide the following:

- The global burden of disease caused by *Clostridium* spp. attributed to food, based on epidemiological data.
- Prevalence of contamination of foods with *Clostridium* spp. in different regions and consumption data of contaminated foodstuffs among diverse populations.

¹ CXC23-1979-1993 Code of Hygienic Practice for Low and Acidified Low Acid Canned Foods; CXC39-1993-1993 Code of Hygienic Practice for Precooked and Cooked Foods in Mass Catering; CXC40-1993-1993 Code of Hygienic Practice for Aseptically Processed and Packaged Low-Acid Foods; CXC 46-1999-1999 Code of Hygienic Practice for Refrigerated Packaged Foods with Extended Shelf Life

- Hazard identification and characterization of *Clostridium* spp., including information on genetic profiles and virulence factors and mechanisms, the dose-response and the susceptibility of the host, especially within vulnerable populations.
- Current monitoring, including the status of the currently available analytical methods (available and validated for regulatory purposes) for monitoring of *Clostridium* spp. in food and the production environment as basis for management and control.
- Strategies for the prevention and control of *Clostridium* spp. foodborne disease, especially as they may be deployed in low- and middle- income settings.

The meeting will be convened in FAO Rome Italy from **17 to 21 February 2025**.

CALL FOR EXPERTS

FAO is currently in the process of identifying experts to participate in future work in the area of **microbiological hazards associated with *Clostridium* spp. in foods**. All applicants should meet the following general criteria:

- Advanced University/College degree in microbiology, veterinary medicine, food technology, food science, epidemiology, public health or related fields;
- Experience in food safety/risk assessment related to microbiological hazards in foods;
- At least five years of experience in relevant fields;
- Scientific publications in peer-reviewed journals, in particular, relevant publications within the last ten years;
- Good knowledge of the English language, both written and oral; and
- Evidence of leadership or invited participation in national or international scientific bodies, committees, and other expert advisory bodies pertinent to the scope of this work

Selection of experts

Applicants' curricula vitae (CV) will be reviewed based on the criteria listed above by a selection panel consisting of three or more individuals appointed by FAO. Selected experts may be required to assist in the preparation of background papers and report drafts (in English). In selecting experts, FAO will consider, in addition to scientific and technical excellence, diversity and complementarities of scientific backgrounds, and balanced representation from geographic regions, as well as gender. Only successful candidates will be notified.

Appointment of experts

Selected experts will be invited to contribute to the meeting only in their individual scientific capacity. An expert will not represent the government of the country of which he or she is a citizen, or the institution with which he or she is associated. The experts designated will not receive any remuneration, however, travel costs, subsistence allowance and other expenses directly related to meeting participation will be the exclusive responsibility of FAO.

Applications

Interested applicants should submit their curriculum vitae (CV) by email to the FAO Secretariat at the address below. The CV should include a description of education, relevant work experience, evidence of national or international expertise on the topic, including a list of peer-reviewed publications relevant to the factors indicated above (please do not include reprints in your submission unless specifically requested at a later date). Applicants must have a good working knowledge of English as correspondence and meetings will be in English only.

Before participating in any related activity, all the selected experts will be required to declare any potential interests associated with the subjects and substances that will be evaluated. Experts will be asked to indicate, in writing, all interests (financial and intellectual) on their part or that of their spouse that may affect, or be perceived to affect, their scientific independence as experts, including one or more of the following conditions: employment (past or present) by any commercial enterprise or private or civil sector association; receipt of research or other study grants from such enterprises or associations; shareholdings in commercial enterprises active in fields related to food safety.

Identification of an interest does not necessarily indicate a conflict nor automatically exclude an individual from participation. For example, as an expert, it is expected that many, if not all, will be employed in some capacity related to the subject matter. These declarations must be completed and a summary of declarations will be

included in the report of the work. In addition, a confidentiality undertaking must also be completed prior to appointment to ensure proper handling of dossiers and proprietary information.

Deadline

Please submit CVs at your earliest convenience. Review of candidates will begin no later than 6 January 2025 and continue until sufficient suitable candidates are identified.

CVs and data submission in response to the call for experts should be sent to:

Kang Zhou

Agrifood Systems and Food Safety Division

Food and Agriculture Organization of the United Nations

Viale delle Terme di Caracalla 00153

Rome, Italy

Telephone: + 39 06 570 50319

Email: kang.zhou@fao.org

CALL FOR DATA

FAO desires that all relevant information and data about *Clostridium* spp. in foods are considered in their assessment and are thus issuing this international call to raise awareness about data needs and invite all interested parties to provide any relevant information/data, particularly data that may not be readily available in the public domain.

Objectives

The purpose of this project is to review and discuss the available data and background documents, to assess the need to modify and update (or develop new) risk assessment models/tools. Updated information will provide a range of risk management options in a number of different regions and a variety of products. This call is aimed to obtain more globally representative data and information on the occurrence, virulence, distribution, illnesses and monitoring programmes for *Clostridium* spp. in foods.

Request for relevant information

FAO wants to ensure that all available and relevant information/data are collected, and are requesting that governments, the food industry, academia, consumer groups, laboratories, healthcare providers and any other interested organizations and individuals submit any relevant data for *Clostridium* spp. These data may be published or unpublished. Reference should be made to related published studies, where applicable.

FAO also recognizes that countries may be at different levels in the development of their monitoring programmes and testing methods for *Clostridium* spp. and welcomes information on the status of *Clostridium* spp. monitoring in foods and the incidence of *Clostridium*-related foodborne illnesses, including challenges encountered.

Please submit, by 31 January 2025, the supporting documents in electronic format, either via e-mail (preferred, if not too large) or on USB keys, in any official United Nations (UN) language (English, French, Spanish, Arabic, Chinese, Russian), and include a title and short description of the content, in English, along with the list of data and information requirements, if possible, to kang.zhou@fao.org. If information is not available in official UN languages, a short summary of the nature of the data should be provided, preferably in English.

List of data and information requirements

Data and information on the following aspects are requested:

A. Sampling plans and testing methods for monitoring of Clostridium spp.

- name of country
- name of the control programme (sampling/testing plan)
- food commodity
- step in the food chain (e.g. abattoir, processing, retail, etc.)
- purpose of the testing (e.g. domestic market, testing of imported products, testing for exportation (indicate the country where the product is exported to), testing to determine national baseline prevalence, targeted exploratory etc.)

- regulatory testing – Testing programmes can be mandatory i.e. imposed by the competent authorities or non-mandatory (ex. Industry-own testing programmes). For each testing programme, please indicate if they are mandated by competent authorities or not, and for regulatory testing if they are implemented by the competent authorities or by industry
- laboratory method for screening/confirmation – Provide the laboratory method(s) for isolation and confirmation of *Clostridium* spp.
- analytical sample size – If available, provide the size (g or ml) of the analytical sample size
- number of samples per sampling period or per year – If available, provide number of the samples for each year or each sampling period (e.g. 1000 samples)
- microbiological criteria (if any), viral indicators or other indicators of contamination
- action taken on positive samples – Provide information on actions taken by competent authorities on positive samples for *Clostridium* spp. (e.g. recall, corrective actions, etc.)
- additional information website
- observations/challenges: any challenge in the design and implementation of your monitoring and testing programmes for *Clostridium* spp.

B. Foodborne outbreak and surveillance data related to *Clostridium* spp.

1) Foodborne outbreaks data:

- time of year and month in which the outbreak occurred
- whether the outbreak/cases were confirmed or suspected regarding the link between the food vehicle and the outbreak of human cases and how this was determined (e.g. laboratory confirmation, epidemiological investigation, etc.)
- number of cases, hospitalizations, and deaths associated with the outbreaks
- age and sex distribution of cases (e.g. range and median)
- individual host susceptibility characteristics of cases (e.g. pregnancy, nutrition, health and medication status, concurrent infections, immune status and previous exposure history or any other risk factors identified)
- occurrence and number of secondary and tertiary transmissions
- the implicated food (if identified) and attributes of the food that may have been relevant in the occurrence of the outbreak
- level of *Clostridium* spp. in the food attributed
- strains of *Clostridium* spp. in the food attributed
- origin (e.g. local, imported) of the food attributed
- place of exposure
- other information
- relevant links (articles, reports, websites, etc.)

2) Surveillance data on *Clostridium* spp. in foods:

- the implicated food and its attributes, if any
- place of origin of food attributed
- level of *Clostridium* spp. in the food attributed
- strains/serotypes of *Clostridium* spp. in the food attributed source and points of exposure
- other information

- relevant links (articles, reports, websites, etc.)

C. Other studies

To update hazard identification and characterization of *Clostridium* spp., recent studies about following information are requested:

- virulence profiles (virulence genes and subtypes)
- genomic types including references to methodology used for typing
- validation studies
- dose-response assessment if performed on data

Data provider: Please provide name, title and full contact details of the contact person for follow-up and further details, if needed.

Confidential and/or unpublished data

FAO recognizes that some of the information and relevant data which are now required may be unpublished or of a confidential nature. With regard to unpublished information and data, this remains the property of the author for subsequent publication by the owner as original material. Unpublished confidential studies that are submitted will be safeguarded in so far as it is possible to do so without compromising the work of FAO. Specific issues relating to confidentiality should be discussed directly between the information/data owners and FAO. For these and other issues, please contact FAO at the contact provided.

Deadline

Please submit any relevant information electronically either via e-mail (if not too large) or USB stick, in any official United Nations language (English, French, Spanish, Arabic, Chinese, Russian), and include a title and short description of the content, in English, to the addresses below at your earliest convenience, but no later than **31 January 2025**.

Data submissions in response to the call for data should be sent to:

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